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DOCUMENTS
OF THE
ASSEMBLY
OF THE
STATE OF NEW YORK,

ONE HUNDRED AND FOURTEENTH SESSION,

1891.

VOLUME IV.—NOS. 15 TO 18 INCLUSIVE.

ALBANY:
JAMES B. LYON, STATE PRINTER.
1891.

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FIFTY-FIFTH ANNUAL REPORT

OF THE

MANAGERS

OF THE

New York Institution for the Blind

FOR THE YEAR ENDING SEPTEMBER 30, 1890.

LUX ORITUR.

"And I will bring the blind by a way that they knew not; I will lead them in paths that they have not known; I will make darkness light before them."—Isaiah xlii, 16.

TRANSMITTED TO THE LEGISLATURE JANUARY, 1891.

ALBANY:
JAMES B. LYON, STATE PRINTER.
1891.

273353

BOARD OF MANAGERS.

	Terms of continuous service.
ROBERT S. HONE	Since 1858
JOHN TREAT IRVING	" 1863
JAMES M. McLEAN*	" 1864
SMITH CLIFT	" 1866
WILLIAM WHITEWRIGHT	" 1866
WILLIAM C. SCHERMERHORN	" 1866
CHARLES de RHAM	" 1867
FRANCIS A. STOUT	" 1868
FREDERICK AUGUSTUS SCHERMERHORN	" 1870
PETER MARIÉ	" 1870
FREDERICK W. RHINELANDER	" 1874
FREDERICK SHELDON	" 1874
CHANDLER ROBBINS	" 1875
PHILIP SCHUYLER	" 1878
JOHN I. KANE	" 1881
EDWARD KING	" 1884
EDWARD SCHELL	" 1885
FREDERICK BRONSON	" 1888
AMBROSE C. KINGSLAND*	" 1889
GEORGE A. ROBBINS	" 1889

* Deceased.

Officers of the Board.

JAMES M. McLEAN*	*President.*
JOHN T. IRVING	*President pro tem.*
SMITH CLIFT	*Vice-President.*
FREDERICK AUG. SCHERMERHORN	*Recording Secretary.*
WILLIAM C. SCHERMERHORN	*Corresponding Secretary.*
WILLIAM WHITEWRIGHT	*Treasurer.*

STANDING COMMITTEES.

Committee on Finance.

John T. Irving.
William C. Schermerhorn.
Edward King.

Committee on Supplies, Repairs and Improvements.

Smith Clift.
Charles de Rham.
Frederick Sheldon.
Philip Schuyler.
Edward Schell.

Committee on Instruction and Music.

Francis A. Stout.
John I. Kane.
Chandler Robbins.
Ambrose C. Kingsland.*

Committee on Manufactures.

Peter Marié.
F. A. Schermerhorn.
Frederick W. Rhinelander.
George A. Robbins.
Frederick Bronson.

The president shall be *ex-officio* member of all standing committees.

The vice-president and treasurer shall be *ex-officio* members of the committee on finance.— (By-Laws.)

---

*Deceased.

Officers of the Institution.

WILLIAM B. WAIT	*Superintendent.*
WILLIAM A. HUME, M. D.	*Attending Physician.*
JOHN H. HINTON, M. D. ABRAM DUBOIS, M. D.	*Consulting Surgeons.*

Teachers in the Literary Department.

Mr. Stephen Babcock.
Mr. Evan W. Jones.
Miss Mary E. Rowell.
Miss Mary F. Esselstyn.
Miss Clara Boomhour.
Miss Naomi Boomhour.
Miss L. G. Lawton.
Miss Florence L. Hart.
Miss Rominda Burnett.

Teachers in the Musical Department.

Miss Hannah A. Babcock.
Miss Lillian L. Greene.
Miss Julia S. Loomis.
Miss Catharine Connell.
Miss Fannie M. Arnold.
Miss Eva E. Kerr.
Miss Jessie L. Alexander.

Teachers in the Kindergarten Department.

Miss Naomi Boomhour.
Miss L. G. Lawton.

Teacher in the Tuning Department.

Mr. Henry Coffre.

Teachers of Manual Training — For Boys.

Mr. Warren Waterbury.
Mr. Daniel McClintock.

For Girls.

Miss C. Townsend.
Miss Hannah M. Rodney.
Miss Florence L. Hart.
Miss Annie E. Hamlin.

House Department.

Mr. WILLIAM H. HARRISON, Steward. Miss L. A. HASKELL, Matron.
Miss L. ADELLE ROGERS, Assistant Matron.

Juvenile Department.

Miss ANNIE E. HAMLIN.
Miss C. TOWNSEND.
Miss CLARA BOOMHOUR.
Miss NAOMI BOOMHOUR.

Reception-room.

Miss FLORENCE L. HART.
Miss ALICE HATCHMAN.
Miss HANNAH M. RODNEY.

Upholstress.

Miss ANNA J. SHERIDAN.

STATE OF NEW YORK.

No. 15.

IN ASSEMBLY,

JANUARY, 1891.

FIFTY-FIFTH ANNUAL REPORT

OF THE

MANAGERS OF THE NEW YORK INSTITUTION FOR THE BLIND.

To the Honorable the Legislature of the State of New York:

The managers of the New York Institution for the Blind, in compliance with the provisions of the act of the Legislature, respectfully submit their report for the year ending September 30, 1890.

The whole number of pupils instructed during the year was two hundred and forty-three (243).

The general health of the pupils has been good. The report of the attending physician is hereto annexed.

The report of the superintendent is also annexed. It refers particularly to the subject of raised printing and writing and contains information of much importance and value to those interested in the welfare of the blind.

It becomes our sorrowful duty to record the death of two members of the board, Mr. James M. McLean and Mr. Ambrose C. Kingsland.

Mr. McLean at the time of his death was president of the institution. He had been a manager since December, 1864, and during all that time he served the institution with great faithfulness and ability. By his death the institution has lost a devoted benefactor and his fellow members a valued and respected friend.

Mr. Kingsland had been a manager only since January, 1889, but during that time he took a deep interest in the welfare of the institution. His kindly manners and charitable feelings endeared him to every member of the board.

The following statement of the moneys received and expended is respectfully submitted:

Receipts.

Cash on hand September 30, 1889		$9,871 58
From general appropriations		45,127 00
Interest on legacy investments:		
For current year	$11,276 74	
Received in advance from United States government	4,740 00	
		16,016 74
From legacies and donations		655 00
From all other sources (counties, industrial department, etc.)		16,978 09
Total		$88,648 41

Expenditures.

Provisions and supplies	$17,993 70
Clothing, dry goods, etc	5,498 87
Salaries and wages	25,166 81
Fuel	3,341 00
Gas	1,322 12
Furniture and fixtures	4,936 29
Repairs and improvements	5,969 04
Transportation and traveling	287 48
Medicines and medical supplies	103 45
Taxes	2,535 00
All other expenses	7,625 92
	$74,779 68
Cash on hand September 30, 1890	13,868 73
	$88,648 41

The report of the treasurer, which is hereto annexed, makes a full statement of the receipts and disbursements of the institution for the past year.

The following is a list of the legacies and donations which have been received by the institution from time to time since its organization in 1831 up to September 30, 1889:

Miles R. Burke	$2,000 00
Jane Van Cortland	300 00
Isaac Bullard	101 66
Elizabeth Bayley	100 00
John Jacob Astor	5,000 00
William Bean	500 00
Peter Gerard Stuyvesant	3,000 00
John Horsburgh	5,000 00
Elizabeth Demilt	5,000 00
Sarah Demilt	2,000 00
C. D. Betts	40 00
Sarah Penny	500 00
Sarah Bunce	500 00
Elizabeth Idley	196 00
Samuel S. Howland	1,000 00
William Howe	2,985 14
Margaret Fritz	100 00
James McBride	500 00
Charles E. Cornell	521 96
Charles E. Demming	50 00
Mrs. DeWitt Clinton	200 00
W. Brown	465 00
Elizabeth Gelston	1,000 00
Robert J. Murray	500 00
Seth Grosvenor	10,000 00
Elijah Withington	100 00
Benjamin F. Butler	800 00
Frissel Fund	2,000 00
Simeon V. Sickles	6,561 87
Anson G. Phelps	5,675 68
Thomas Reilly	2,254 84
Elizabeth Van Tuyl	100 00
Thomas Eggleston	2,000 00

Sarah A. Riley	$100 00
William E. Saunders	725 84
Thomas Eddy	1,027 50
Robert C. Goodhue	1,000 00
Jonathan C. Bartlette	190 00
Stephen V. Albro	428 57
John Penfold	470 00
Madame Jumel	5,000 00
Mrs. Steers	34 00
Thomas Garner	1,410 00
Chauncey and Henry Rose	5,000 00
Elizabeth Magee	534 50
John J. Phelps	2,350 00
Rebecca Elting	100 00
Regina Horstein	250 00
G. Martins	500 00
John Alstyne	10,320 44
Elizabeth and Sarah Wooley	5,984 83
Benjamin Nathan	1,000 00
Thomas M. Taylor	6,151 94
Simeon Abrams	2,804 00
James Peter Van Horne	20,000 00
Caleb Swan	500 00
Mrs. Adeline E. Schermerhorn	10,000 00
Henry H. Munsel	3,396 32
Thomas Cardevoyne	5,000 00
William Dennistoun	11,892 77
William B. Astor	5,000 00
Benjamin F. Wheelwright	1,000 00
George T. Hewlett (executor)	500 00
Ephraim Holbrook	39,458 16
Mrs. Emma B. Corning	5,000 00
Eliza Mott	140 00
Mary M. Colby	595 86
D. Marley	1,400 00
Henry E. Robinson	6,000 00
M. N. Hobby	726 28
Eliza Mott	350 00
Caroline Goff	4,161 59
Simeon Abrams	2,248 70

Catherine F. Johnson		$530 00
Maria Hobby		1,187 68
Eliza Mott		650 00
J. L., of Liverpool, England		25 00
Eliza Mott		335 54
Daniel Marley		349 30
Emma Strecker	$10,000 00	
Interest	2,221 66	
		12,221 66
Eli Robbins		5,000 00
Margaret Burr		11,011 11
Mary Burr		10,611 11
George Dockstader		125 60
Mr. Rosevelt		10 00
Samuel Willetts		5,045 00
Augustus Schell		5,000 00
James Kelly		5,000 00
George A. Dockstader		100 00
William B. Bolles and Leonora S. Bolles		2,949 11
Edward B. Underhill		500 00
George Dockstader		100 00
Cash (no name)		15 00
Cash (no name)		40 00

Of the funds thus received, there was invested in United States bonds one hundred and fifty-eight thousand dollars ($158,000) at par value, the actual cost of which was one hundred and sixty-nine thousand nine hundred and seventy-one dollars and ninety-one cents ($169,971.91), and in New York city stocks, twenty-nine thousand dollars ($29,000) at par value, the actual cost of which was thirty thousand seven hundred and twenty-two dollars and fifty cents ($30,722.50).

There is also deposited in the Union Trust Company of New York, a portion of said fund, amounting to thirty-nine thousand nine hundred and thirty-three dollars and seventy-nine cents ($39,933.79), to which will be added the interest accrued since June 30, 1890.

The balance of the fund has been applied to the purposes of the institution, in such ways as the managers thought would increase its efficiency and add to the comfort of the pupils under their charge.

The managers take this opportunity to again express their high appreciation of the ability and usefulness of the superintendent, Mr. Wm. B. Wait. For thirty years he has been connected with the institution, twenty-seven of which, in the capacity of superintendent, he has devoted to the welfare and improvement of the institution and those under his charge.

Since the incorporation of the institution it has educated more than 1,500 pupils, very many of whom have been enabled, from the instruction thus obtained, to support themselves, and all to add to the comfort of those around them.

The managers respectfully ask from your honorable body an appropriation of two hundred and fifty dollars ($250) for each pupil, being the amount which was appropriated last year.

They also take this opportunity to express their thanks for the aid and support which your honorable body has always given to this very useful and benevolent institution.

All of which is respectfully submitted.

New York Institution for the Blind.

JOHN T. IRVING,
President pro tem.

F. Aug's Schermerhorn,
Secretary.

City and County of New York, *ss.:*

John T. Irving, of said city, being duly sworn, saith: That he is president of the New York Institution for the Blind, and that the above report, signed by him, is true, to the best of his knowledge and belief.

JOHN T. IRVING,
President pro tem.

Sworn to before me, this 3rd day
of December, 1890.

Hulbert Peck,
Notary Public, New York County.

Report of the Treasurer.

William Whitewright, Treasurer, *in account with the* New York Institution for the Blind, *year ending September* 30, 1890.

Dr.

To cash balance, September 30, 1889......		$9,871 58
To cash received from State New York....	$45,127 00	
To cash received from State New Jersey...	7,727 31	
To cash received from New York county..	4,863 70	
To cash received from Kings county......	1,344 99	
To cash received from donations	155 00	
To cash received from legacies...........	500 00	
To cash received from rents, Mount Hope,	400 00	
To cash received from music and instruction..........................	89 54	
To cash received from clothing, dry goods, etc............................	226 13	
To cash received from sale of manufactures	1,994 90	
To cash received from interest...........	16,016 74	
To cash received from supplies...........	235 77	
To cash received from repairs and improvements..........................	4 67	
To cash received from rebate on taxes, Mount Hope	21 67	
To cash received from furniture and fixtures	12 60	
To cash received from Suffolk county	40 76	
To cash received from traveling expenses..	7 63	
To cash received from petty account.....	8 42	
		78,776 83
Total..		$88,648 41

Cr.

By cash paid for supplies	$18,097 15	
By cash paid for salaries and wages	20,749 20	
By cash paid for clothing, dry goods, etc.	5,498 87	
By cash paid for furniture and fixtures	4,936 29	
By cash paid for repairs and alterations	5,969 04	
By cash paid for traveling expenses	287 48	
By cash paid for gas	1,322 12	
By cash paid for Mount Hope property	835 70	
By cash paid for music and instruction	3,263 18	
By cash paid for taxes, Mount Hope	2,535 00	
By cash paid for raw materials for manufacturing	985 25	
By cash paid for petty account	925 25	
By cash paid for clothing, dry goods, salaries and wages	2,789 69	
By cash paid for manufacturing department, salaries and wages	1,627 92	
By cash paid for insurance	1,403 00	
By cash paid for boys' shop account	78 89	
By cash paid for fuel	3,341 00	
By cash paid for legacy tax	134 65	
		$74,779 68
Balance		13,868 73
Total		$88,648 41

W. WHITEWRIGHT,
Treasurer.

Examined and found to be correct.

WM. C. SCHERMERHORN,
JOHN T. IRVING, } *Finance Committee.*
EDWARD KING,

November 21, 1890.

Report of Attending Physician.

To the Board of Managers of the New York Institution for the Blind:

GENTLEMEN.— In submitting to you my annual report, it affords me pleasure to state that the past twelve months have been noticeable for healthfulness; not only have all cases in the sick wards yielded to treatment, but I think it worthy of note that no death has occurred since 1888. In this respect your institution has presented a remarkable record, unsurpassed, I believe, by any institution in our land, and I gladly testify to the ever-watchful care of the superintendent, and his earnest coöperation in all matters pertaining to the sick, as contributing largely toward this happy result.

Respectfully submitted.

WILLIAM A. HUME, M. D.,
Attending Physician.

NEW YORK, *November* 12, 1890.

Report of the Superintendent.

To the Board of Managers:

Gentlemen.—I beg to submit the following items of information, with such comments as seem appropriate, as my report for the year ending September 30, 1890, it being the fifty-fifth report of the institution, and the twenty-eighth consecutive report by the writer:

The number of pupils September 30, 1889, was	199
Admitted during the year	44
Whole number instructed	243
Reductions	37
Remaining September 30, 1890	206

During the year no death has occurred and we have not been visited by any epidemic. Situated as we are, in the midst of a dense population, we are necessarily exposed to the introduction of disease from without, arising from conditions which do not exist within our own walls, and over which we have no control. The ailments of the pupils are often constitutional, in many cases being associated with the causes which obscured the sight.

It is our purpose that the hygienic and sanitary conditions of the school shall be excellent, and that the care of the sick shall be tender and efficient. In this connection I can not speak too highly of the administration of the medical department by the attending physician, Dr. William A. Hume.

Among our pupils will always be found individuals with low vitality, while, upon all, the necessary effect of blindness is to restrict activity, induce physical inertness, and thus impede growth and development. Nevertheless, experience shows that our pupils are capable of a degree of sustained effort in school work that can hardly be surpassed by pupils of similar age and grade in any school.

Such power of sustained effort, exhibited year after year, under a most burdensome deprivation, furnishes even better evidence of good sanitary and hygienic conditions than is found in a clean bill of health.

I submit, herewith, the course of study pursued in the several departments, and a schedule showing the manner in which the time is divided and occupied throughout a day of school work: also a statement of the manufacturing department, and a catalogue of literary and musical works now published in the New York Point system.

The whole work of the school may be comprehensively grouped under three heads — physical education, mental education and manual education. In each of these divisions are several subjects of an appropriate character, in respect to which the pupils are regarded in the three-fold aspect of development, information and application: the first relating to the special action and growth of the faculties, the second to the imparting of useful knowledge, and the third to application of knowledge for practical purposes.

The work which seems necessary to be done, and which we undertake to accomplish during the school period of a blind person, is simply enormous, far exceeding in variety and difficulty the work which is done in the general schools with persons of similar age who can see.

The problem of education which we are trying to solve is difficult in all its phases, but more so as respects girls than boys.

It is evident that there are but few occupations in which a blind woman may engage for a money compensation. In every household, however, there is a wide range of duties which afford active and healthful occupation, the performance of which is a valuable service, representing money earned, and requiring the attention of a mind well trained in the use of knowledge relating to the various interests of the household.

For these reasons household economy has been given a place in the course of instruction, as being especially adapted to girls. The room set apart for this purpose is furnished with four gas stoves of modern type, portable gas ovens, hot and cold water, and all the utensils found in a well-ordered kitchen.

The instruction, which is necessarily independent of the administration of the household of the institution, relates to the nature and production of foods, to their kinds, grades and values, to their preparation for market, to the modes of combining and preparing them for use, to the care and economical use of food, both before and after it has been cooked, and to the various processes of cooking, with practical tests as to the sufficiency of boiling, baking, etc. It also includes the names, uses, manipulation and care of culinary and other household utensils, dexterity in handling, measuring and mixing solids and liquids, and such other matters as are necessary to the proper management of a kitchen.

With this knowledge and training, the blind girl, if she has the force and character which every capable person must possess, will find pleasant employment, and render valuable service in her own home. She may save herself and her friends from the humiliation which, in adult life, attaches to incompetence and an unearned support, and enjoy an independence and contentment which idle persons can never know.

It is difficult to imagine any household, however lowly or luxurious, in which there is a blind girl, which would not be much better and happier by her efficient participation in its affairs.

During the year, twenty-four girls, arranged in classes of four each, have been instructed in kitchen and household work. They have shown deep interest, and have made very commendable progress.

In the literary department the usual course of study has been followed.

Special mention should be made of the work done by the pupils in the study of arithmetic, by the use of the completed text-book printed in New York Point. A large number of pupils, arranged in several groups, regularly prepare the lessons assigned, by their own study of the book. The same has been done with the history of the United States. This uniform use of a text-book by classes of different grades, is wholly unattainable in the case of the Boston line letter.

Work in other departments has proceeded as usual. A comprehensive course is pursued in the history, theory and practice of music. The various branches of this subject should be taught with thoroughness. They present all the elements necessary for discipline and culture, and the mastery of them ought to lead to a remunerative occupation and an honorable profession.

It is evident that the attempt to cultivate, in the dark, that high degree of certainty, celerity and variety of muscular action which the performance of instrumental music demands, must be surrounded by embarrassments. Accordingly, it cannot reasonably be expected, that among the small number of blind persons of school age, there should be found many who will attain a high degree of technical skill, while the number of those possessed of the power to interpret will be still less. This will be more apparent in connection with the fact that all the instruction and practice in this many-sided and difficult subject of music must be crowded into the school period, together with physical, manual and literary training.

But one need not be a master in the art of interpretation of music in order to be a good performer, a teacher, or a piano-tuner. In all the essentials of the art and culture of music, the pupils in our schools for the blind may be thoroughly grounded, and indeed must be, if they are to compete for position and occupation with their more favored fellows who can see.

In this department, some system of tangible notation which the pupils can write as well as read, and in which every kind of music can be correctly expressed, is indispensable. For many years our pupils have learned their music from the printed page, or from their own embossed writing, without the aid of a music reader, whose duty it was to dictate the music, note by note at the instrument to the pupil who played and learned it as it was read to him.

A blind lady residing in Kentucky, in a letter written September 30, 1890, referring to the music now available in New York Point, says: "I like the collection of point music very much indeed, and feel as independent as a seeing teacher. I appreciate your musical system more and more every day." Letters of similar tenor are received from blind persons in all parts of the country.

The studies of the pupils in harmony, counterpoint, music history, acoustics, piano, organ, guitar, singing, point music notation and piano-tuning furnish a round of work, technical, practical and theoretical, which is of the utmost importance in every school for the blind. This has long been recognized; and every available resource should be applied to make the work broad and thorough, and to render the pupils independent in doing it.

The industrial or manual-training department holds the same important relation to the school which it has so long sustained. In manual work the pupils not only acquire much useful information, but are incited to be industrious, to love work, and to recognize its value. The classes in the several branches of study have made good advancement. In general, the conduct of the pupils has been commendable, and they have pursued their studies with cheerfulness and a manifest desire to make the best use of the great advantages which the school affords.

My acknowledgments are due to the teachers and officers of the school for their hearty co-operation, and for the sincere and efficient manner in which their duties have been discharged.

The eleventh annual meeting of the American Association of Educators of the Blind was held July fifteenth, sixteenth and seventeenth at the institution in Jacksonville, Ill. The attendance was large, and the papers and discussions covered a large number of relevant subjects.

It was decided at this meeting that, until further order, that portion of the government grant devoted to the New York Point should be used in preparing *text* books of all grades — upon all essential branches. If this resolution is carried out and the books be put into the hands of pupils for individual study, it will do more to strengthen and broaden our educational work than has ever before been accomplished by means of embossed printing.

The publications of the Society for Publishing Evangelical Religious Literature for the Blind are gradually increasing in number. Every book appears in the New York Point. The international series of Sunday-school lessons in this form are sent weekly throughout the United States to all who desire them. There has long been an urgent desire for a hymn book in this system, and at the request of the trustees of the Society I have undertaken the task of compiling one and shall spare no effort to make such a selection as will be acceptable in every home.

Since 1867–8, when the agitation of the subject of embossed point types was commenced in this country, at which time the general features of the New York Point system were explained, there has been no restatement of the case in these reports. In the meantime, while the system has steadily gained ground and secured a permanent footing, a large number of men and women have entered into this field of educational work and it is important that they should be well informed in respect to this subject, which more deeply affects the present and future educational welfare of the blind throughout the country than any other matter connected with our work. In the general interest therefore, I submit herewith a sketch of the rise, development and present state of embossed printing, keeping carefully in view the relation of the subject to the education of the blind in the United States.

All of which is respectfully submitted.

WM. B. WAIT,
Superintendent.

A REVIEW

OF THE

Origin and Development of Embossed Literature and Music for Touchreading, with Special Reference to the Educational Interests of the Blind in the United States.

By William B. Wait.

The schools for the blind in New York, Boston and Philadelphia were opened in the order named, in the years 1831–33.

Among the important subjects which were early presented for consideration was that of embossed books. At that time no system which had been devised was deemed of sufficient worth to command general recognition and approval. One after another, various devices had been suggested, the deficiencies of each only serving to prompt some new plan, until, both on the continent and in England, and especially the latter, there was a confusion of types for the blind, like that of tongues at Babel.

It was at the outset quite natural to assume that the usual forms of Roman type, as seen in books, would, if embossed, be easily sensible to the touch; and remembering also that there was a natural predilection for the ordinary forms, we can readily understand why the Roman script and the upper-case and lower-case letters were each selected by different persons as presenting the best forms for the raised letters.

It ought also to be noted that, while each of these systems was put forth in a tentative way only, for the reason that there was no available mode of making any conclusive preliminary investigations, yet the expense attending the work, the necessity of printing as large an edition as possible, and the desirability of preserving the plates, divested each plan of its character as an experiment, and gave it a permanence and consequent recognition which was not merited, and because of which true progress was greatly obstructed.

But, notwithstanding the esteem in which the forms of the Roman letters were held for the purpose of embossed literature, they were considered by some to be unsuitable by reason of their complexity. The Roman forms were, however, generally accepted as the alphabetic basis, simplification being gained by omitting unessential and retaining characteristic parts of the letters.

With a view to reducing the enormous cost and bulk of books, other schemes were put forth which attempted to utilize the elements of stenography and phonetics. These forms were arbitrary and had no relation to the Roman forms.

No less than twenty styles of embossed printing were brought out in Great Britain, between the years 1828 and 1838, six of which obtained recognition. Of these, three, Hauy's script, Gall's angular serrated upper and lower-case, and the Fry-Alston plain upper-case, were Roman; one, that of Moon, was an extreme modification of these forms; another, that of Lucas, was stenographic, while Frere's was a phonetic style.

On the continent Hauy had led the way in 1784 by the adoption of the written form of the Roman letters. The failure of this plan after a lapse of about fifty years, seems to have directed attention in France to the fact that the sense of touch has no vicarious quality by which it can take the place of sight; that it is in no way quickened or developed by the memory of what has been seen; and that an alphabet for touch-reading, possessing the tangible power necessary to enable the blind in general to read it, and also furnishing the means of embossed *handwriting,* must be sought for outside of the Roman forms, and avoid the use of lines, curves and angles. The key to the whole alphabetic structure and to the symbolisms of literature, music and mathematic , was to be found in the combination of raised points or dots; for these alone combine the elements of tangibility. and *writability.*

The first definite step on this new line was taken in 1825 by M. Charles Barbier, an officer of artillery, who, being rich and philanthropic, was interested in promoting the education of the blind. Barbier suggested a combination of points arranged in a rectangle, containing six points vertically and two points horizontally, making twelve points to fill a space.

Although Barbier had made choice of the right means, he was in error in his mode of application. The most conspicuous, though not most radical defect, was the large and unwieldy size of the signs. This was observed by Louis Braille, who was then a teacher in the Paris school, and who reduced Barbier's rectangle one-half, thus limiting the number of points to six instead of twelve. On this basis, Braille was the first who devised a practicable scheme for presenting literature to the blind in a truly tangible form, suited to the tactile capacity of all. This was in 1829. The plan underwent some modifications and came to nearly its present form in 1834.

Thus, after about fifty years, a new point of departure had been reached and a new epoch opened.

In England a period of great activity was begun about this time, all the systems now known in England, except the Braille, having been brought out between 1832 and 1838. Although the new idea had reached England, still its great importance was not recognized, and all the promoters of tangible literature followed more or less closely the false trail which had been taken by Hauy fifty years earlier, and which in France at least had now been abandoned.

Thus, in 1832, we find that part of the Bible was printed for use in England in the Roman script of Hauy, from types found in Paris. But although the script form was rejected, a solution of the problem was expected from the use of the letter-press forms of the Roman letters, and it was hoped that in this way the error made by Hauy would be retrieved. The upper and lower-case letters, in their simple forms and in various altered shapes, were put forward in quick succession, their advocates all following Hauy on the Roman road to nowhere.

Amidst all this confusion and uncertainty there was but one line of real advance, and that was opened by the Barbier-Braille system.

This was the situation in England and France in 1831–33, when a similar field of educational work and inquiry was entered upon in this country.

The importance of avoiding such a diversity of tangible type as existed in Europe must have been evident. The general and prospective welfare of the schools and of the blind, and every dictate of prudence and economy, demanded the adoption of only a single system. Nevertheless, at the very outset two systems were adopted This is somewhat surprising, and how it came about is a matter of interest. It seems that at first there was a desire for united action between the schools in Boston, Philadelphia and New York. At the head of the Boston school was Dr. Howe, the leader in this line of thought, while the Philadelphia school was in charge of Mr. Friedlander, who had been a teacher of the blind in Europe. There is reason for believing that there was an understanding to the effect that Dr. Howe and Mr. Friedlander should inquire into the subject, and that each having decided upon the style of tangible letter which he deemed most suitable, should submit it, with his reasons, to the other for criticism. In case of agreement, the matter was to be deemed settled; but in case of disagreement, the subject was to be laid before the head of the New York school, who should have the deciding voice. Friedlander decided in favor of the Roman capital, and adopted the Alston letter with slight changes. About the time he was preparing his results for transmission to Dr. Howe, he received a book printed in the angular lower-case type, as the expression of Dr. Howe's views. Friedlander seemingly did not regard the adoption and publication of books as within the meaning of the understanding, and the arrangement came to an end. The Philadelphia school, perhaps feeling that Friedlander had been unduly anticipated, and believing that his selection of Alston's Roman capitals was quite as fully justified as Dr. Howe's choice, approved his course, and in 1837 adopted the Roman capital letter.

There are many facts which throw light on the matter.

First. Such an understanding was at the time eminently desirable, for reasons heretofore indicated.

Second. Dr. Howe was himself not wholly in favor of the Roman line alphabet, for in 1833 he wrote to his board as follows: "Without now detailing upon all the methods which I would substitute for those hitherto used, I may say that it is founded upon the only principle which can possibly obviate the immense inconvenience of bulk and expense, viz., that of contraction or stenography, a principle, which, if acted upon, may, I am convinced, render books for the blind as cheap and as compact as those printed for our use."

Third. The urgency and extent of his efforts exceeded the limits of such an arrangement. If Dr. Howe had known that the Alston letter, which was already available in book form, was to be a competitor, it would have been quite proper to present the Boston letter in printed form also. This would have required only a few pages at most. Dr. Howe says, in his fourteenth report, that the subject was taken up in 1834. Yet, by 1835, we find a published catalogue of several books, some of which had been sent to England in the same year.

Fourth. The Roman capital letter was not adopted in Philadelphia until 1837. Prior to that time, and as early as 1835, several books had been printed in the Boston letter, and the New Testament was in press, through the aid of the American Bible Society, whose powerful support had been enlisted. There could be neither time nor means for the employment of *two* systems, which were essentially of the same kind; and there was no good reason for assuming that the angular lower-case letter, as proposed by Dr. Howe, would not be as serviceable as the capital letter, if not more so.

Fifth. The system adopted by Philadelphia was not peculiar to Friedlander, but was borrowed from Alston, who in turn had received it from Dr. Fry; from which it would appear that the rejection of the Boston letter was not influenced by personal vanity or local pride.

But whatever may have been the disposing influences the facts remain. The false theory of Hauy, which after fifty years of unfruitfulness was taken up in England and Scotland, had now been accepted as the basis of our own educational system; while the true theory suggested by Barbier, and exemplified by Braille, was and continued to be ignored. In the whole history of education, it will be difficult to find a single instance in which the force of a great example, and the power of precedent, even though not a good one, are seen more conspicuously than in this matter. The chief redeeming feature of the situation in our own country was that the false doctrine appeared in only two forms, while in Europe it was manifest in half a dozen.

From 1837 to 1863, there was no effective agitation of the question of types in this country, and the Boston letter was passively accepted. In 1853, however, at a meeting of American Instructors of the Blind, the following resolution was adopted:

"*Resolved,* While the convention would not discourage the use of any type or character now in existence, they decidedly recommend a uniform type or letter for all future publications for the blind."

"*Resolved,* That the 'Boston letter,' so called, in which the great bulk of books for the blind have been printed, be preferred as the standard type for all future books printed for the blind, subject to the amendments proposed in the following resolution."

"*Resolved,* That a committee of three, including the president of this convention (Dr. Howe), be appointed at this meeting to examine the 'Boston letter,' to ascertain whether any alteration in any of said letters be expedient, and if so to recommend its general adoption."

So far as is known, the committee was not appointed, and no other meeting was held until 1871. It is also worthy of note that the records of this meeting make no mention of the Braille system. Thus the field was almost wholly occupied by the Boston letter; and books printed at the Boston press were introduced into the different schools as they were organized, one after another, throughout the country.

The most potent factor, however, in establishing the Boston line letter, and which, more than all else, enabled it to supersede the

Philadelphia letter, was the printing and free distribution of the whole Bible by the American Bible Society.

A strong effort was made at an early date to give the Roman upper-case letters ascendancy, by publishing an English dictionary, which it was hoped would be largely used in the schools. Mr. Wm. Chapin, who was principal of the Philadelphia school at the time, had previously, while at the head of the Ohio school, given his support to the Boston lower-case letter. He now suggested the union of the two Roman styles, the upper-case to serve as capitals, and the lower-case for the body of the book. This expedient offered a solution of the dilemma between expressed conviction on one side, and official duty as the executive officer of the Roman capital party on the other. This suggestion was not adopted, however, and the dictionary was printed in the Friedlander letter.

In the meantime (1837–1863), no effort whatever was made to give the Braille system any standing amidst the embossed printing of the time, notwithstanding that both of the line letter systems gave early evidence of insufficiency. The report of the New York school published in 1837 says: "Reading is readily acquired by some of the blind and with difficulty by others. Hence it is that the pupils do not all engage in this exercise, and that the *best class* of readers is composed of females and of children not engaged in the work-shop."

The following extract from the New York report of 1838 shows that the precipitation of these two forms of embossed type upon our educational system, without a strenuous effort to secure general approval of a single system, was unwarranted and injudicious: "Both the institutions at Boston and Philadelphia have anticipated our own, in printing for the blind. This subject, however, has not been neglected by our committee; they have been engaged during the past year in ascertaining from experience the merits and defects of the various forms of type now in use for the blind, with the intention of endeavoring to procure a uniformity of printing in all the American institutions, as soon as they are prepared to judge what should be the one alphabet adopted. The committee thinks that the experience of the institution will enable its managers early in the ensuing year to act understandingly with the other institutions in the United States, in selecting a form of type for the use of all American institutions."

"The importance of having one form of type adopted by the institutions is manifest from considerations so obvious on the slightest reflection, that your committee would be unwilling to see our institution begin printing before doing all in its power to effect so desirable an end; but the committee is decidedly of the opinion that so soon as the institution has done what it can to produce the desired uniformity, the business of printing for the blind should be at once commenced."

I have said that the Barbier-Braille idea was ignored.

In 1833, in an extended account by Dr. Howe of his visit to the schools of Europe — among others that of Paris — no mention is made of the new idea.

In 1846, after visiting Europe, Dr. Howe published a valuable paper on printing for the blind, in which mention is made of the efforts of Hauy, Gall, Fry, Alston, Lucas and Frere, but Braille is not noticed.

In 1852, in an extended notice of music, no mention is made of the Braille notation, which was then the only practical system known.

In 1863, after again visiting the principal institutions of Europe, Dr. Howe published some suggestions for improving the school at Boston, but no allusion was made to the Braille system.

In 1869, the report of Dr. Howe contained four pages in regard to music, but made no mention of the musical notation of Braille.

In 1871, in a letter to the convention of instructors at Indianapolis, referring to the qualities essential in a type, he said: "It should resemble in form and appearance the letters in common reading books."

In 1872 the convention of instructors was held at the Boston school. An extended outline of the New York system of musical notation was given and discussed in connection with the French system. A resolution was adopted, requesting the writer to perfect the system in detail as soon as practicable. In 1873 the report of the Boston school contained Dr. Howe's remarks, in which allusion was made to Cadmus, Weissenberg, Paradis, Hauy, Alston and others, but no reference is made to the Braille system, or to the action of the convention in regard to the New York system.

In the Boston report of 1875 there is a statement of the great musical advantages to be found at the school in Boston, but the Braille system is not mentioned. In the Philadelphia reports, neglect of the Braille system is equally conspicuous. And yet the public mind needed more light, as no correct or final conclusion could have been reached, unless all the available facts which were related to the question were brought clearly into view. Silence was not more to be commended than the haste which had thrust an effete system in a double form upon our schools.

But, although the field had been so generally occupied as by a night march by the Roman intangibles, which had taken their position behind the scriptures on the one side and the English dictionary on the other, the French tangibles found here and there a foothold.

The merits of the Braille system were recognized chiefly by a few blind persons who were engaged in teaching. There were no books, no funds for printing, and the apparatus for writing was very expensive. It was proscribed as being arbitrary on the ground that it was unlike the ordinary forms of letters. For these reasons the use of the system was restricted to very narrow limits, as it depended upon individual interest and enterprise only.

This was the situation in 1859 when, being engaged as a teacher in the New York school, I first observed that many of the pupils did not read.

In 1863, having been called to my present position, the low state of the art of reading demanded attention. Many of the pupils did not read, and text-books were not used in class work. The published literature was very considerable, but it could not be generally used unless the pupils could read well. At that time, not having studied into the matter, I assumed that the pupils could learn to read the books in the line letter with uniform facility, according to their grade, and determined to spare no effort to secure that result. The entire school was arranged in graded classes. New alphabet cards and reading books were procured. The classes all read at the same hour each day, five days in the week, and much extra time was given to the slower pupils. From week to week the grades were rearranged so that no pupil should be out of grade. This course was continued for two years with the following result, according to the standards generally followed:

	Per cent.
Could read with facility	20
Could read moderately well	48
Non-readers	32

Statistics collected at this time showed the condition in some of the largest schools to be as follows:

	Read with facility. Per cent.	Read moderately. Per cent.	Non-readers. Per cent.
Philadelphia school	24	18	58
Michigan school	22	39	39
Indiana school	40	21	39
Ohio school	42	20	38
Wisconsin school	31	33	36
Maryland school	48	38	14

Similar facts were requested from the Boston school, but none were received.

My original standard of facility had been the average number of words read aloud in a minute, viz., 160, by several seeing teachers, the selections being made from different authors and including easy and difficult compositions. At the end of the two years of special effort we found but five pupils who could read with facility according to this standard. The above figures returned from schools where there had been no special exertion, such as had been made in New York, indicated either a different standard or better methods. In order to get the most reliable information and to study the matter thoroughly I visited several of the schools, including the one in Boston. The results may be summed up as follows:

First. The books were generally in Boston type.

Second. The alphabet cards and readers were like our own.

Third. The pupils ranged about the same as our own in respect to age, ability and sex.

Fourth. The number of words read per minute by the average sight reader was nowhere used as the standard of facility.

Fifth. Any given facile reader usually showed a different rate and quality of reading in different books, while several facile readers showed similar differences when reading from the same book.

Sixth. The group of non-readers included some of the brightest pupils.

Seventh. The capacity for touch-reading was no test of mental capacity.

Eighth. Text-books were nowhere in use by the classes.

Ninth. It appeared that the books, which were not many, had been often read, so that the pupils were familiar with their contents. For this reason the number of readers was greater than it would have been if unfamiliar books had been used.

Tenth. The Braille system was at this time (1866) practically known by only a few individuals, mostly teachers, but it was not recognized in the course of study of any of the schools named above.

In view of all these facts, the only conclusion which could be reached was that the Roman systems could no longer be properly regarded as educational forces, and that they failed to fulfill the necessary conditions of touch perception and the urgent wants of the blind.

This conclusion, though not desired by me, was inevitable, and hence a point of departure had been reached. At this juncture my attention was turned to the merits of the new idea of points as against lines. The old line letters could not be written, and they lacked tangible power. The point letters could be written, but it was necessary to show that they possessed that great prime essential, tangibility. In order to test the matter the Braille system was taken into consideration.

About 1860, the Braille had been taught in the St. Louis school, and an inquiry in regard to the success in the use of that system elicited the following statement:

Whole number of pupils		69
Able to read with facility	45	
Able to read moderately well	24	
		69
Percentage of readers		100

In the New York school a test was made with eight pupils, who, after a long period of patient effort, had utterly failed to distinguish the Boston letters one from another. The number of lessons given with the point letters ranged from five to thirty, and every one succeeded well. In addition to this a test was made with the entire school, and in eleven lessons of one hour each the tangible efficiency of the point letter had been demonstrated in the case of every pupil.

In France, upon similar experience, the system of Braille, or some offshoot from it, had at this time completely supplanted the Roman forms, and was extending to the other schools of continental Europe. Besides all this, and more important, perhaps, was the fact that the point sign, in the very essence of its structure, in its simplicity, and its entire avoidance of linear forms, contributed the strongest internal evidence of its fitness to respond to the sense of touch.

Moreover, a consideration of the functions and limitations of the sense of touch led to the conclusion that no compact, writable and effectively tangible letters could be formed of lines, and that such letters must be formed of points.

Up to this time two conclusions had been irresistibly forced upon us.

First. That the code of embossed line signs, being intangible to a large class, being unwritable, and impracticable for the purpose of musical notation, was unsuited for school purposes and for the general use of the blind, and was therefore fatally defective.

Second. That a code of *point* signs would possess all the requisites which were lacking in the *line* codes.

Thus, having passed the second stage, there remained but one further step, namely, the adoption of a code of point signs.

The Braille system for literature and music, apparently, at least to uncritical observation, had been constructed upon correct principles, and the addition of the system as a regular branch of study seemed to be proper. Of course, a code of literary signs can readily be learned, but the structure of musical notation is much more complex. In order that the subject might be introduced and taught in the most efficient manner, I studied the whole system carefully. My work was greatly facilitated by an excellent translation of the second revised edition of the French system, by Mr. E. P. Capp in 1863, and by a book entitled "The Braille System," published by Henry Robyn in 1867. While studying this system it was manifest that, in the construction of the literary code, the important considerations of the size of the signs, which affects the bulk and cost, and of simplicity of arrangement, which affects the ease of both writing and reading, had been disregarded, while the music code appeared to be defective and less comprehensive than could be desired. I also thought that I had discovered the correct principle of construction and the correct mode of application. (These matters will be referred to hereafter.) But, remembering the confusion existing among the *line* codes and their advocates, and knowing that the schools in Boston and Philadelphia were both opposed to any and all so-called arbitrary systems, and hence that no point code could be generally introduced without a hard and long struggle which must result in the supersedure and final extinction of one or the other, and feeling the importance of securing wide and united action, I waived for the time the considerations of defect and improvement, and advocated the general adoption of the Braille.

In the thirty-first New York report, after stating, in a general way the mode in which a system better than the Braille could be constructed, I wrote as follows, in the hope that others, seeing my readiness to set aside my own well-founded views, would be impelled to do likewise. I quote: "But the Braille system is an excellent one, and, inasmuch as there are already too many systems of printing in use, which difficulty would be magnified by the introduction of another, it is urged that every institution should be supplied with the necessary apparatus, so that all pupils may be taught to write it, in doing which they will learn to read it, thus making a demand for books and music, printed in the only type known at present, which is available for all purposes to all the blind. And I would especially urge upon all persons or institutions possessing facilities for printing for the blind, the importance of printing books in the point signs of the Braille system."

This appeal elicited no response from Boston or Philadelphia Not a sheet of embossed Braille was printed. Meantime, I continued to study the question; but, whereas my first thought had been to improve the Braille by remodeling it, the conviction was soon reached that the vertical position of the Braille signs, which had been derived from Barbier, and which allotted a fixed and unvarying space to all the signs alike, did not admit of the most advantageous application of the only correct principle of construction, and therefore could not yield the results in simplicity and in saving of space and time which ought to be gained.

In 1868, I published a discussion of the whole subject, setting forth without reserve, and analyzing every known principle of construction, and for the first time indicating the *mode* in which the principle, which I had previously suggested as the correct one, should be worked out.

The closing paragraphs are as follows:

"Having thus indicated some of the principles to be followed in the construction of a more legible and cheaper system, which may be written as well as read by the blind, it may be observed that these principles should be reduced to practice, and a thorough trial made before a definite alphabet or system of signs can be decided upon."

"Otherwise, the error of devising an alphabet and trying to adapt the blind to it, instead of adapting an alphabet to the blind, will surely be repeated."

"It is believed that the general character of the cheapest, most tangible and useful system of printing for the blind has been indicated; and, so far as experiment has been made, the results are highly satisfactory, and certify the correctness of the views advanced."

In accordance with this statement, after long and laborious efforts, a literary code was devised, which, by the aid of some type and a small press, was critically and thoroughly tested. After the merits of the device had been demonstrated, another effort was made to secure the adherence of the Boston and Philadelphia schools to a *point* system. I stated to Dr. Howe and to Mr. Chapin that, notwithstanding my belief that a code much superior to the Braille was within view, I would abandon all further efforts in this direction and adopt the Braille if they would do the same and coöperate to provide books printed in that system. It should be borne in mind that at this time the whole country was almost entirely dependent on the Boston press for embossed books.

The proposal was not accepted. Soon after this there came reports, that a new alphabet was being prepared in Boston. Although Boston had its face set to the rear, still a move forward might be expected. The situation was significant of the Friedlander episode.

The next step in advance was taken in 1869, when the New York literary code was published in the report for that year, together with experimental proofs and arguments in its support. This stimulated a good deal of interest in many of the schools, but as there were no printed books at hand little was done beyond the distribution of alphabet leaflets and a few writing frames, until 1871, when another forward movement of unusual importance occurred. In that year the first meeting of the American Association of Instructors of the Blind was held at Indianapolis, at which the whole subject of printing and writing for the blind was considered at length. For the first time in the history of this or of any other country, the merits of the Roman system, represented by the capital and the small letter forms, and of the point system represented by the Braille and the New York codes, were considered by an assembly of educators of the blind. As an evidence that my views in regard to the Braille were neither singular nor unwarranted, but were consistent with the conclusions reached by others who had pursued a similar but independent line of inquiry, I quote from the proceedings of that convention the following remarks by Mr. Foster, then superintendent of the St. Louis school, where the Braille had been highly esteemed since its advent there about 1860.

Mr. Foster: "I represent the Missouri institution, and we are supposed to be decided advocates of the Braille system. When I entered the institution, one of the first objections I found to the Braille system was the immense surface it occupied. I wished to find a better way if possible, and I studied the Braille system in order to find out its defects, if it had any. I wanted something that would be advantageous to the blind, and have as few objections and as few disadvantages as possible. Then I watched the pupils in my own and other institutions to see what their method of feeling was."

"The first objection I had to the Braille system, as I said before, was the space it occupied; the next was the indefiniteness of its characters."

(The speaker here illustrated his criticisms on the Braille alphabet by reference to the Braille forms for the letters *k*, *a*, *c*, *m*, *n* and *w*, using the blackboard for the purpose.)

"In many of the characters used by Braille, as *k*, *w*, *m*, *u*, and others, the space between the points is two-twelfths of an inch. The finger being convex, the consequence is that it touches the space between the points, and the sensation is indistinct, so that *k* is liable to be taken for *a*, *b* for *l*, and *w* for *c* or *m*. Parts of these letters are also liable to be taken for punctuation marks."

"Readers almost invariably draw their fingers toward them in reading; but it was found, in the next place, that the points could be best distinguished in a longitudinal direction. The little papillæ must be struck in that direction in order to convey a distinct sensation to the brain. Right here is where the system failed. We made them strike across. When we came to a three-point letter the finger of the child covered but two of the three points."

"Mr. Wait published his system in 1868. I found a great difference in the use of it. The finger of the pupil would pass rapidly across the page in a direct line. The little papillæ caught the points with ease, one after another; there was no confusion, and the child could read it rapidly."

"I have not had books in my institution to test it among the pupils as a body, but have used the alphabet, teaching it to various scholars. I took a class of seventeen, ranging in age from 5 to 22. One of them learned Mr. Wait's signs in twenty-two minutes, and the whole class in seventy-five minutes. That was enough to satisfy me that it could be rapidly learned, and that it possessed advantages over the Braille system."

"We had better not cling to the Braille arrangement of the points if there is anything better, and that I think we have in Mr. Wait's system."

The discussion resulted in the adoption of a resolution to the effect that the New York literary point system should be taught in all the institutions for the education of the blind.

The exigencies of the situation were such that some decisive action seemed to be necessary, and the meeting of this body of teachers, the first of the kind since 1853, was most opportune. The convention was free to take any action, and if it had approved the Braille system there would have been no consistent course left for us all but to adopt that cheerfully and at once, and seek to establish it in every school in the land.

This emphatic indorsement by the representative body of the teachers of the whole country, not only brought the New York code into general notice and esteem, but fully justified its author and every other superintendent in energetically seeking to carry into effect the resolution of the convention. It also seemed to change what had before been exhibited as passive neglect and indifference into a somewhat active, though cautious, opposition.

It was at about this time that an agitation concerning the use of capitals, according to the rules of written language, was started. Prior to this time, capital letters had not been used in this way in either of the Roman systems. Mr. N. B. Kneass, of Philadelphia, put the idea into practice, and issued some publications in a combination type, capitals and small letters appearing in their usual relations.

This union of the intangibles was not adopted in Boston, where small letters only are still used. The combined system was as fatally defective as the elements of which it was composed. Those who could not read the line letters separately could not read them when combined.

The idea, however, was used as a means of assailing the New York Point, and it was charged as a fatal defect that it had no capital letters. It was also said that the New York Point alphabet ought not to be adopted, inasmuch as there was no musical notation in that system.

Although I had said nothing on the subject of musical notation, even in 1871, still I had long been at work upon it as closely as my many duties and limited time would permit. As for the use of capitals in embossed printing, they had never been deemed important in any system.

In 1872 the convention of educators was held at Boston. At this meeting the objection that the New York system had no capital letters was disposed of by providing them; likewise as to the objection in regard to music, an outline of the system being then presented in comparison with the arrangement of Braille.

Even at this time, had it not been clearly shown that the formation of an effective and rational code of music symbols was entirely practicable and that the essential features had already been worked out; the convention, in consideration of the immense importance of a tangible music code, would doubtless have been constrained to fall back upon the Braille system, notwithstanding the evident superiority of the New York literary code, and the prestige which it had gained. The discussion resulted in the adoption of the following resolution:

"*Resolved*, That Mr. Wait and all others having systems of tangible musical notation for the blind, be requested to perfect their systems and report the same to the several institutions at the earliest practicable moment."

In compliance with this action, the New York system of musical notation was published early in 1873, and in a number of the schools it was at once placed among the regular branches of study.

But, as heretofore stated, the forward movement received no recognition in the Boston reports, which are the medium of information, until 1875. In that year Dr. Howe says: "A class of advanced scholars has given considerable attention to the study of the literature of music, and a great amount of matter referring to this subject has been written out by them in the Braille system."

From this, two instructive inferences may be clearly drawn.

First. That the students of the Braille were few in number, for advanced classes in music are never large.

Second. That their work was wholly on the literary side, from the fact that no mention is made of the *notation*, which is the factor of greatest value in connection with music.

In the succeeding year (1876) unmistakable indications of a purpose on the part of Boston not to accord with the judgment of the American Association of Instructors of the Blind, and to embarrass the progress of the New York system, were evident.

The Boston report says: "Musical notation according to the Braille system has been constantly used by the classes in harmony, of which there are five in number, and all their exercises are written in it. This system is pronounced by the most competent and impartial judges far superior to all others. It is ingeniously contrived and scientifically arranged Its method is simple and its acquisition extremely easy. The characters occupy less space and are more legible than those of any other contrivance of embossed notes. A system of musical notation, by which the blind themselves can write and read, is, of course, a great assistance to those who have no opportunities for regular recourse to a seeing reader; but in our establishment there is ample provision for this latter purpose, and thus much valuable time and arduous labor are saved."

This account reads like the description of some new discovery by an enthusiastic narrator, who feels that he must rest his statements on the authority of certain "most competent and impartial judges." Reading between the lines, the implication is clear that the judgment in favor of the New York system had been rendered by incompetent and biased judges. The passage from fulsome praise to almost complete disparagement, from unqualified approval to virtual disavowal, which is presented in this extract, can hardly be regarded so much as an indorsement of the Braille, as a condemnation of the New York system and of the action of the American Association of Teachers.

The competent and impartial judges referred to were doubtless the British and Foreign Blind Association, and a coterie in Boston who appeared to act as a subsidiary branch of that association. Since these judges were not named they shall be nameless here, but will be recognized as the "anti-progressists" when we come to consider the question of their competency and impartiality.

The next demonstration, which revealed more clearly the position of the anti-progressists, occurred at the meeting of the American Association of Instructors held at Columbus in 1878.

At the previous meeting, in 1876, a committee had been appointed to report at the next meeting upon the relative merits of the New York and Braille musical codes. Although the question as to literary codes had been settled, there had been no open discussion of the general subject since 1872. The report of the committee was due in 1878. Knowing that the anti-progressists were disposed to dispute every step, and deeming it desirable that they should have an opportunity to present their case fully, the executive committee, on the suggestion of the writer, who was its chairman, several months in advance of the meeting, invited one of their number to prepare a paper on the subject for the meeting. The invitation was accepted, and a paper submitted with the title, "Comparison of the Braille and New York Systems of Point *Writing* and *Proposed Modification of the Braille System.*" (The italics were not in the original.)

The essayist did not discuss the question of musical codes, but considerately left that subject " to other and better judges." This paper had been prepared with the greatest care. All the resources of the anti-progressive party had been used to make it as perfect as possible. The issue was made at their own time and under circumstances peculiarly favorable to them, for the progressive party had no knowledge of this maneuver. The New York system had been published several years prior to the Indianapolis meeting, but this new Braille was unknown here until it was presented at this meeting.

Nevertheless, it was shown that the radical structural defects first seen in the Barbier type, and which had been adopted by Braille, had not been eliminated. Errors as to facts and computations were pointed out, and likewise the fact that the very modes and resources by which it had been sought to remedy the defects and supplement the deficiencies of the Braille, could be applied equally well and to a greater extent to the New York system, without changing its structure.

Notwithstanding the misapprehension of real facts and the assumption of facts which did not exist; notwithstanding that not a real but a spurious Braille was used in the so-called comparison; notwithstanding the use of factitious devices and arguments which might advantage the Braille and disparage the New York system, still the attack of the anti-progressists upon the latter failed, and there was no alternative before them but retreat, in effecting which, they hoped to snatch victory from defeat under cover of a *modified Braille.*

The contest turned upon the adoption of the following resolution by Mr. Anagnos, of Boston:

"*Resolved*, That the modified Braille point writing should be taught in all American institutions for the blind."

At the conclusion of the discussion, which was long and spirited, the question being called for upon the resolution by Mr. Anagnos, that gentleman moved that it be laid upon the table. This tactical move was courteously agreed to by the association, and enabled the opposition to take up a new position and bring the British contingent into the contest against the New York system.

This movement was effected during the consideration of the report of the committee of 1876, which had been appointed to examine the New York and Braille musical codes. The committee consisted of Mr. F. Barrington, a professional musician and for many years a teacher of the blind; Mr. T. Reeves, an excellent musician, and a teacher in the school of Boston, and Mr. S. Babcock, a teacher of mathematics in the New York school. Mr. Reeves and Mr. Babcock are blind. Although the report was signed by all the members of the committee, who were unanimous in regard to all their findings of fact, yet the majority of the committee recommended the New York musical code, while Mr. Reeves approved the original Braille.

Having failed in every effort to break the force of this report in favor of New York, the opposition assumed an entirely unexpected position and opened fire from their masked guns.

Mr. F. J. Campbell, of England, said that, as Mr. Wait was aware, at Batavia in 1874 he (Campbell) took a very decided opposition to the Braille notation. He did not want it urged at all. For one, he felt very much obliged to Mr. Wait for what he had done in this matter. Speaking of the New York and Braille systems, he said that he had used them both thoroughly, and for the sake of getting something to meet his views, he had devised a system which combined the good points of both. He did not desire to show the demerits of the New York or the Braille systems, but to show the merits of one which he denominated the "international system." He also said that he had letters from Dr. Armitage to the convention in which that gentleman proposed that if the convention would adopt this international system he would give up Braille, or if that could not be done, then the convention could be requested to keep the matter open until another time. Mr. Campbell said that his knowledge of music and his experience led him to believe that this was the true key to a new system not American, French, nor English, but international, and that would tend to great simplicity in preparing music for the use of the blind.

Mr. Campbell also announced his intention to prepare a paper on the whole subject, to be read at the next meeting of the association in 1880.

The writer had been criticised for introducing and advocating the New York system, on the ground that it was unnecessary and only served to complicate the situation, and no one had been more lusty in the cry than Dr. Armitage. Yet, at this time he proposed to abandon the Braille on the instant, for a scheme wholly unknown and untried, on condition that the American Association of Instructors of the Blind should abandon the New York system and imitate his precipitate and injudicious example.

That this was a mere maneuver, an illusive pretense, designed to delay action and impede the progress of the New York system, is shown by the fact that Mr. Campbell did not prepare the paper, and that the "international" system, so boldly announced, has never to this day assumed any definite form. This effort proved futile.

Thus the New York literary and musical codes again substantiated their superiority and excellence, and were again approved. Several years had passed since it was first introduced. No other scheme of tangible symbols was ever so quickly and widely scrutinizd as this had been. At every step it had been compelled to meet and overcome not only the power of recognized authority, but factious and disingenuous opposition. And yet its opponents had not been able to suggest a single radical defect in its structure, or to force upon it a single change for the cure of any alleged defects. This fact establishes a strong presumption that the New York system is correct both in principle and application. How is it with the

Braille? In a book published in 1871, Dr. T. R. Armitage, said: "Another obstacle to the adoption of the Braille system in America has been the want of unity amongst its advocates. The little Braille that has been used in America has not been pure Braille. At Boston another modification has been made; the Braille frame is used, but the New York principle is adopted."

(Let the reader compare this statement made by an English writer in 1871 with the extract quoted from the Boston report of 1876, bearing in mind that the "modified Braille" was not brought upon the open field until 1878, at Columbus.)

But there was confusion abroad as well as here, for the paper already noticed and read at Columbus in 1878, says: "Moreover the European institutions are already pondering the subject of a modification of the Braille system."

The fact is that the Braille system has been literally torn asunder, modified, remodeled and rearranged by many persons, sometimes from a candid purpose to improve the system, and sometimes from predominating motives, which, if not already clear, may become more transparent as we proceed. The defects of the Braille will continue to evoke efforts for their correction. These can only prove futile, as the defects are radical, and hence this system and its parallels will remain in an imperfect and unstable form.

It is worthy of note that Dr. Armitage, in this same book from which I have just quoted, said almost prophetically: "It is perfectly certain that this modification will not spread beyond Boston, and that it will probably before long fall into disuse there."

The severe ordeal, to which the New York system was subjected, and the test of time and usage, were necessary to secure confidence and to demonstrate that *it* was the proper instrument with which to convert the beneficence of the general government as well as of private philanthropy into a great educational force, diffusing knowledge, arousing dormant powers into activity, and making glad the hearts of people throughout the whole land.

Thus the way was prepared for the next great event in the history of embossed literature.

In 1876 a committee was appointed by the American Association of Instructors of the Blind to memorialize Congress on behalf of the educational interests of the blind. After much hard work and many delays, Congress, in March, 1879, passed an act granting the sum of $10,000 annually to be expended in the publication of embossed books, and the manufacture of tangible apparatus for the general benefit of all the institutions for the blind in the United States.

Considerable time was spent in making the arrangements necessary for utilizing this grant, but in 1882, at a meeting of the association, it was voted that fifty per cent of this fund should be set apart and used in the publication of books in the New York Point. Record should be here made of the fact that this suggestion was originally made in a letter to me by Mr. Wm. Chapin, a life-long advocate of the line letter.

From this time onward the publication of books and music in New York Point has continued without interruption.

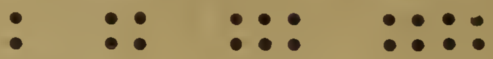
At the meeting of 1890 it was deemed advisable to decide that, until further order, all publications in New York Point, out of the government fund, should consist of *text*-books, until a good selection of books for all grades should have been provided. This is an important decision and can not fail to greatly increase the effective power of the schools, and contribute to render the pupils much more independent and self-helpful in their school work by enlarging the means for individual study.

This sketch might be closed at this point were it not that one or two events of recent date demand consideration. Since 1878 this subject has not occupied the attention of the American Association, nor has the matter been discussed in the New York reports since 1868. But within a few months there has appeared in a newspaper, which circulates almost exclusively among the institutions, and also in a monograph distributed at the recent convention in Jacksonville, Ill., a virtual reiteration of the statements and arguments which proved to be utterly ineffectual at Columbus in 1878. A large number of new men and women, superintendents and teachers, have entered into this work since that time. These statements and arguments involve so many details of a purely technical character that the general reader can find neither the time nor the facilities for working out the problems for himself, and hence can not detect errors in fact or in the application of principles nor discern specious elements used in the argument.

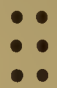
In considering these recent outgivings of the anti-progressists I shall endeavor to avoid details and aim to treat the subject in the broadest possible way upon general principles, which, if they be sound, will enable us to reach a conclusion intelligently without going minutely into particulars.

Incidentally, something may be learned about the competency and impartiality of the judges mentioned in a previous extract.

The accompanying illustration of the faces of the type, with the full number of points on each base form, will assist the reader:

New York base forms: 

Number of combinations, 120.

Braille base form: 

Number of combinations, 63.

In the New York system the number of points in each letter is regulated by the principal of recurrence. The letters most often used, like *e* and *t*, take the least number of points and the least space, while those less often used, like *z*, have more points and occupy more space.

In the Braille system there is but one base form, so that the space never varies, whether one point or six are used.

The principal of recurrence was not and is not used in the original Braille. This principle, suggested and applied by the writer in the structure of the New York alphabet, is applicable to the Braille base form, however, and by this means the number of points may be reduced below what is required by the original Braille.

This does not, however, in any way reduce the space or bulk, but only the time or labor of *writing* below what is required in the original Braille.

When the Boston anti-progressists abandoned the Braille they had recourse to the principle of recurrence in constructing a "modified Braille," with which they hoped more effectually to embarrass the New York system.

From these statements it will be seen that there will be a difference in the space and in the time or labor of writing required by each system. This difference can be determined by comparing a given amount of matter as printed or written in each system.

For this purpose the printer's font of type, which contains that proportionate number or quantity of each letter which long experience has proved to be correct, was taken as a standard. The font which the writer used in making comparisons contained only 520 letters, viz., *z*—1; *k, j, g, x* — each 3; *b, v* — each 7; *g, p, w, y* — each 10; *c, f* *u, m* — each 12; *d, l* — each 20; *p, r* — each 30; *a, i, n, o, s* — each 40; *t* — 45, and *e* — 60, making 520 in all.

The opponents of New York represent that they used in one case 50,038 letters, and in another 109,473 letters for making comparisons, the proportion of each letter having been found by the very unnecessary labor of actual counting in selected compositions; and they also imply that conclusions drawn from comparisons made on a basis so much smaller than their own, are hardly worthy of credence. Let us see. If the recurrence number of *each* of the letters as above stated, in a font of 520 letters be multiplied by 95, the sum of the whole will be 49,920 letters, or only 118 letters less than 50,038. In other words the font of 520 letters is an almost exact unit of measure, and represents the larger font reduced to its lowest terms. In the same way, if the recurrence number of *each* letter in the font of 520 be multiplied by 211, the sum will be 109,200, or only 273 letters less than the font of 109,473 letters. It is clear, therefore, that nothing was gained by the use of these imposing numbers, while the risk of error was increased.

The fact that the writer classified some selected matter to the extent of 30,828 letters, and used the number in the first accounts published, is not quoted by the opposition, evidently because they thought that the disparity between 520 letters and the vastly greater number used by them would create a presumption against the conclusions based upon the smaller number.

This count of 30,828 letters was made, not to learn facts common in the experience of type founders and printers, but as a step in ascertaining the number of the vocal and silent letters used in our language and their relative frequency. The facts were used in the construction of a *phonetic* point system, which after careful consideration was discarded.

Again, the opposition, in making comparisons, has always contended for and adopted what they call a "uniform scale." This means that the size of the points, their distance apart, and the spaces separating letters, words and lines, shall be the same in each system. The rule may be admitted in respect to the size and distance of the points, and perhaps as to the letter space; but it operates unfavorably to the New York code for two reasons. First, the word space, in the New York code, is equal to two points in both printing and writing, while the Braille word space requires the room of from two to four points in printing, and not *less* than four points in writing. This is owing to the fact that adjustments can be made with type which are impossible with the writing tablet.

So, also, the *interlinear space* ought not to be less than that separating the parts of a letter or sign; otherwise confusion may arise from joining the lower points in one line with the upper points in the next line. This, together with the general weakness of the system, forced the Braillists into the practice of interlining, which is done by omitting each alternate line of printing or writing on one side of the paper, so that the impression made from the opposite side may fall into the blank spaces so made. The same thing can be done with the New York system. But waiving these objections, we will make the comparison as if the two systems were in these respects uniform.

Assuming, then, that the letter, word, and line spaces are the same in each system, these items are eliminated, and the comparison will relate only to the space taken by the letters or type-bodies themselves. In practice, the Braille type is used in a vertical position, but for convenience we may make it assume a horizontal position, like that of the New York letters. The space then required in printing the font of 520 letters in each system, in a continuous line, can thus be determined.

Each letter in Braille, or the modified Braille, takes the space of three points. Hence, 520 × 3 = 1,560 points in length.

In the New York system:

	Points.
One hundred and forty-five letters of one point each	145
Two hundred and forty-two letters of two points each	484
One hundred and thirty-three letters of three points each	399
In length	1,028

	Points.
Length of Braille line	1,560
Length of New York line	1,028
Excess of Braille line	532

From which it appears that when the alphabet only is used, *any* Braille code requires 51.75 per cent more space than the New York system.

But, besides the letters, there is another class of signs which may be considered, viz., the punctuation marks. The punctuation marks to go with a fifty-pound font of type number about 116. In Braille each of these takes three points; 118 × 3 = 354. In the New York system:

	Points.
Forty-eight marks of one point each	48
Twelve marks of two points each	24
Twenty-four marks of three points each	72
Twenty-one marks of four points each	84
Eleven marks of six points each	66
	294

	Points.
Length of line for punctuation marks in Braille	354
The same in New York	294
Excess of Braille	60

From which it appears that the space required by these marks in Braille is twenty per cent greater than in the New York code.

The labor of writing the same font is as follows:

	Points.
In the original Braille, 520 letters require	1,558
In the New York code, 520 letters require	1,224
Excess of labor in Braille	334

Or twenty-seven per cent.

	Points.
The punctuation marks require in the New York system	314
In the Braille	278
Excess in New York system	36

In any case the use of punctuation marks does not materially affect the question, as they form only about one-twenty-fifth part of the body of the composition.

That there is a radical and inherent difference between these two systems, and that the advantage is almost entirely on the side of the New York system seems unquestionable.

Let us now briefly notice the methods by which our opponents have attempted to remove this evident disparity, and to create the impression that it does not exist.

Their first task was to remove the discrepancy in regard to bulk or space, which of course affects the cost greatly. In doing this, recourse was had to the use of a large number of abbreviations. In the original Braille, as published by the originator himself, the number of contractions shown in the table of signs was fourteen. The greater part of these were not true abbreviations, but were used primarily to indicate accent. The accent marks were not expressed, a single sign being used for the accented letter, and the other letters joined with it in one syllable. Of course, abbreviations can be used in any method and to any extent, "by each writer to suit himself," as Braille said. This shows that he regarded none but those given as being an essential part of his system. Speaking again of abbreviations in connection with some suggestions he had made in regard to the matter, Braille said: "The merits of the stenographic system can only be appreciated by *long practice.*"

But in the contest with the New York system, the number of abbreviations was raised from fourteen to forty-six. The lists, however, are not uniform, that used in England differing from that in Boston. Nevertheless, they are published as "authorized," and appear with the Braille alphabet as if they had formed part of the original system.

It will aid us to get a correct view of the character of this proceeding if we bear in mind that any system can be legitimately judged and classified only by the principles and mode of working out which are essential to and characteristic of its structure. All elements which can be applied alike by any system should be regarded as common to all.

But even by these meretricious means, what was gained? The opposition monograph distributed at Jacksonville says:

"When contractions are *not* used, the same matter occupies in the New York Point as printed, twenty-one per cent less space than in the *modified* Braille. If each system be estimated with *its own* contractions, the New York as printed requires 10.2 per cent less space than the modified Braille."

The phrase, "its own contractions," means ten for the New York, and forty-six for the modified Braille. Just how the latter came to possess an exclusive right to the abbreviations does not appear.

After all this effort, the New York system with the twenty-six letters and only ten contractions — thirty-six signs in all, is still admitted to be ten per cent more compact than this nondescript Braille, with the alphabet and forty-six contractions, making seventy-two in all, being nine more than the original number of Braille, the excess being gained by doubling some of the signs.

With regard to *labor of writing,* the same writer says: "When contractions are *not* used, the modified Braille has an advantage of 12.6 per cent over the New York Point. If each system be estimated with 'its own' contractions, the modified Braille will have an advantage of 19.3 over the New York system."

Let us make a comparison on this point by the use of the font of 529 letters. We have already seen that, in the New York system, to write 520 letters requires 1,224 points.

The modified Braille requires for:

	Points
One hundred letters of one point each	100
Two hundred and fifty-five letters of two points each	510
One hundred and twenty-five letters of three points each	375
Thirty-three letters of four points each	132
Seven letters of five points each	35
Total	1,152
Excess in New York	72

This is 6.2 per cent.

A considerable advantage would doubtless inure to the New York system in the matter of space by a correction of the calculation, but time will not admit, as the process is long and tedious.

In respect to both space and labor of writing, the use of the same or of similar contractions in the New York system as have been superadded to the Braille, will put the New York system far in the lead.

The following is an illustration of gaining a factitious advantage over the New York system. After assuming the "uniform scale," which makes the space between lines the same in each system, this item may be thrown out of the comparison, as has been remarked before. But it has been retained by the opposition, and in the calculation has been given the value of two points. Hence the vertical space of a letter and one adjacent interspace is given thus in modified Braille:

	Points.
For the letter	3
For line space	2
Total	5

In the New York:

	Points.
For the letter	2
For line space	2
Total	4

This gives a difference of one point or twenty-five per cent.

The facts are as follows:

	Points.
Letter space for Braille	3
Line space for Braille	1
Total	4

	Points.
Letter space for New York	2
Line space for New York	1
Total	3

Difference, one point, or thirty-three per cent.

This error of eight per cent was in favor of modified Braille.

What has been said thus far has related to the literary system.

In regard to the musical notation, it may be said briefly that the defects in the Braille notation are radical, and cannot be corrected by any process of remodeling.

The radical defect consists in the fixed, inexpansive, vertical type or letter, which admits of but sixty-three signs and requires a uniform space for each. The four base forms of the New York system, extending to four points horizontally, admit 120 signs. The notation of music requires not less than 140 signs.

The paucity of his signs compelled Braille to resort to the expedient of giving them a double meaning. The fact that Braille was justified in resorting to this means, inasmuch as he knew of no better way, and that he succeeded in evolving a working code of music symbols, furnishes no evidence that his materials were sufficient, or that the expedient itself was correct in principle. The use of a given sign to represent two different things of the same species, as for example a half-note and a thirty-second, could only be regarded as absurd, if it were not a sheer necessity.

The advocates of the Braille say in defense of this incongruity, that the pupil or reader can inspect the measure, and so determine the value. So the mariner, approaching the coast in a fog, may take soundings and go at half speed, but he would much prefer clear sailing. Moreover, it is not simply a question of value, but of position in the measure.

That Braille recognized the difficulty arising from this ambiguity, is shown by the fact that he provided as best he could against it by preparing a cumbersome sign to be placed before the equivocal one to signify in what sense it should be taken.

He further said that a sign may be placed "between the principal divisions of a measure *which embarrasses* us." Such ambiguities, giving rise as they do to a class of signs needed to correct them, but which have no proper relation to the notation, can only arise from an imperfect plan of construction. The members of the British executive council seem to have been aware of this difficulty and desirous that it should not be increased. In considering the subject of contractions for literature, they adopted among others the following rule, viz., "not to let the same sign have two different meanings." (Dr. Armitage, 1886.) Thus the use of equivocal signs which is approved when resorted to by Braille in his music code, is rejected as being bad in literature. And yet, an ambiguity in music is much more confusing than in literature, especially to the learner. Braille evidently was well aware of the difficulties which were engendered by attempting to represent musical notation by an insufficient number of symbols. But more important than this is the fact that Braille was precluded by the insufficiency of his signs from working out a complete equivalent to the notation, as presented in the piano score even of his time (1834). That Braille did not attempt to provide for the piano score is proved by the absence from his system of many marks, found in almost any piece of piano music — such as the pedal, foot-off mark, turn, inverted turn, mordent, inverted mordent, and many signs of tempo and dynamics.

It is possible that Braille foresaw that his system would break down from sheer bulkiness by the addition of a great number of signs requiring two, three, four and more cells or types, and therefore confined himself to the representation of music in its simpler forms, as the chant, melody and the separate parts for different voices or instruments.

The incompleteness of the music system of Braille, as published in 1834, is clearly shown by the incongruous character of the different systems which have been devised, and to which his name has been attached. Three examples are here cited, without entering into minute details.

Comparing three different publications the variations are manifest.

Braille, as published by himself in 1834:

No. of signs of one cell or type each	62
No. of signs of two cells or types each	23
No. of signs of four cells or types each	1
Total	86

Braille signs, as published by Dr. Armitage in 1871 and 1886:

No. of signs of one cell or type each	63
No. of signs of two cells or types each	5
No. of signs of five cells or types each	3
Total	71

These signs are not used in the manner prescribed by Braille.

Braille, as published by H. Robyn, 1867:

No. of signs of one cell or type each	63
No. of signs of two cells or types each	15
No. of signs of three cells or types each	5
No. of signs of four cells or types each	6
No. of signs of five cells or types each	3
Total for piano music	92

For stringed instruments:

No. of signs of two cells or types each	27
No. of signs of three cells or types each	3
Total	30
Grand total for all purposes	122

The piano of the time of Braille was very inferior to that of to-day, and romantic music, as adapted to the piano, has been almost wholly developed since that time, so that the notation of piano music was simple as compared with that now in use. Any one who attempts to represent modern musical notation as seen, for example, in the piano score of a Beethoven sonata, as edited by Dr. Riemann, will find the Braille system utterly inadequate, and will be forced to formulate a great number of new signs, which, as we have seen in the case of Dr. Robyn, must extend to five or more types or cells. It is impossible to build upon the basis of sixty-three signs, a tangible system, equivalent to the modern notation. The New York system, on the contrary, has kept pace with modern ideas, and furnishes a notation adequate for the most complex problems.

In the New York system there are 140 signs, of which 120 are simple or single, and twenty are compound. In their use the equivocations pointed out in the Braille are avoided. That the capacity of the New York code is equal to the demands of the various branches of musical notation is shown by the publications which have been made. These include approved books of instruction for the violin, piano, organ, guitar, brass-band instruments, and harmony, beside music of the best class for the instruments named.

In regard to the tangible power of each of the two systems of point signs, it might appear at first thought that there would be no appreciable difference. There are, however, two considerations which materially affect the question, viz.: first, that those letters of which the mind must most frequently form a conception in reading should be the simplest in construction; and second, that the body of the letter or sign should lie, if possible, wholly within the sensory surface of the palm of the finger, as it rests on the letter, so that the only motion of the finger shall be parallel with the lines. In both of these requirements it is clear that the construction of the New York system is superior to any Braille or vertical mode, as may be seen by the different action of the finger in reading each system.

An effort has been made to complicate the question and embarrass the New York system by raising the issue of space and labor of writing.

In literature the related questions in the order of their importance are: first, tangibility; second, compactness; third, labor of writing. In music the related questions in their order are: first, tangibility; second, clearness of expression; third, completeness for all purposes; fourth, a full list of working rules, at once simple and uniform.

The items of space and labor of writing are wholly subordinate, and while in these respects the New York system is superior to the Braille, yet if it were not also superior in the other qualities named, it ought not to be preferred.

The correct writing of all grades of music to the amount needed for general use in any school, would be not only a great task, but it is impracticable. What would be the condition of things if the work of teaching music to those who can see, whether in schools or under private tuition, depended upon music written by the pupils in staff notation? Having no hope of success on the main issues, the objectors have tried, without necessity or propriety, to raise an issue about labor of writing. Those who refuse to use the literature and music already printed in the New York Point, ought not to complain of the labor of writing.

An effort has also been made to discredit the New York system by raising the issue of space between the New York and the Boston letter.

The *main* issues between these two systems were those of tangibility and writability. These were long since settled in favor of the New York system. When a system takes second place or is ruled out on these main issues, there is no need for further discussion.

A word at this point in regard to the bulk of books in the New York system will suggest the probable fallacy of adverse arguments. Thus far, all printing in this system has been done from two fonts of type. At first the types were used to emboss thin sheets of brass, which formed the impression plates with which the printing was done. In order that the points might be properly raised upon the brass sheets, they were widely separated on the types, making them larger than otherwise would have been necessary. After a time, the plates of sheet brass were superseded by a plate of tin upon which the points are imposed by an ingenious device made by Mr. B. B. Huntoon, and which has been a most potent factor in lessening the cost of books and in promoting the progress of education. As the letters embossed directly from this first font of types or from the corresponding brass plates were too large, a second font was cast; and as the cost of such type is very great, it was deemed best to keep the first font and use it in printing music. Of course, the space required is greater than it would be with a font of less size. But this could very well be done, inasmuch as 100 pages represents vastly more matter in music than in literature. The second font, though smaller than the first, might have been made still more compact than it is.

The Gospel of John, the first considerable volume published in New York Point, was not printed from a regular font, the letters being built up from small type, having two points, one of which was cut off as occasion required. This device was resorted to by the writer in the experimental stage of the work, to avoid expense.

That the space occupied in printing or writing may be affected by purely mechanical causes will be seen by the following illustrations:

A page of twelve inches of the Gospel of John contains forty-six lines.

A similar page of "Wee Davie," printed from the second font before referred to, contains thirty-eight lines, a difference of twenty-one per cent.

On a New York writing tablet, forty-two lines are written in a space of twelve inches, a difference of ten per cent in favor of the written matter as compared with the printed matter in "Wee Davie."

Although these differences are not incident to the nature or structure of the system itself, this class of facts has been taken as the basis of a comparison unfavorable to the New York system. They are clearly irrelevant, and any argument based thereon should be dismissed.

In the perusal of this sketch, a feeling of wonder must have arisen in the mind of the unbiased reader as to the cause of the opposition which has been made to the New York system. It seems clear that it can not be founded upon the superiority or exclusive merits of the Braille.

At the time of the introduction of the New York Point there was no printed literature or music in the Braille available for our schools; no capital had been invested in plates or in printed books, and hence there could be no objection on the ground of loss, or of difficulty in effecting a change from an established system to a new one. Neither could such strenuous opposition have been justly excited by any demerits of the New York system, for none had been proved; nor by unseemly haste or obtrusiveness in the manner of its introduction as an element in our American system of education, for it is here by general invitation and approval. Its sole purpose was to supply a most urgent need in the schools for the blind, and in their home life and individual experience. But, even when it had only been suggested, there was an evident wish either to avoid or to forestall it, and afterward, upon its actual appearance, a settled determination to reject it at all hazards. What motive could have been strong enough to impel a course of action at variance with the great body of American educators, and with the interests of the pupils in any school from which the system might be excluded? Prejudice is as powerful to provoke resistance and obstruction as reason is to stimulate action and progress. An examination of recorded facts may bring to view influences somewhat occult but active, and reveal the position of the parties more distinctly.

The British and Foreign Association for Promoting the Education and Employment of the Blind was formed in England in 1868. Out of a membership of over 100, many of whom were persons of rank and title, there was a small number, perhaps eight, who were blind. Of these latter, six were formed into an executive council. The objects and methods of this council, and the esteem in which the general competency and usefulness of the seeing members of the association were held, are shown in the following extract:

"It has seemed to several gentlemen who have paid much attention to the subject that the only mode of remedying the present state of things is for the blind to consider it themselves, and for this purpose a council has been formed, the members of which are totally blind, or so nearly so as to make it necessary for them to use the finger and not the eye in reading." (*Report of Executive Council*, 1871.)

The controlling influence in this council was exercised by Dr. T. R. Armitage, a gentleman to whom the blind of England are under great obligations for the devotion and zeal with which he has agitated the subject of types. Here are some of his views. He says: "It seems self-evident that the proper persons to decide upon the best method of instruction by touch are those who have to rely upon this sense, viz., the blind themselves." (*Dr. T. R. Armitage, on the Education of the Blind, etc.*, 1871.)

"The opinion has long been gaining ground that for any good result to be obtained, the question must not be settled for the blind, but by the blind themselves. This is the principal idea embodied in the present scheme, * * * the formation of the British and Foreign Blind Association, which, though numbering many members blessed with the inestimable gift of sight, has remained true to the axiom that the relative merits of the various methods of education through the sense of touch should be decided by those, and those only, who have to rely on this sense." (*Dr. Armitage*, 1871 *and* 1886.)

The influence of this fallacious doctrine is seen in the following extract:

"And here I would urge a fact which has been too often overlooked in the many systems and appliances that have been devised for the use of the blind, in that it is the blind themselves who should be the judges of their value. I would not seem ungrateful for the patient, devoted and often valuable labors of our seeing friends, but that these have so often proved worthless is in a great measure due to the fact that they were directed by the judgment of sight, rather than that of touch; and until a person has acquired some facility in reading a system by the sense of touch, he cannot be a fair judge of its legibility to the blind." (*Paper by J. W. Smith, on New York, Braille and modified Braille, Columbus*, 1878.)

"It is high time for the blind of this country to relieve their seeing friends of the burden of a problem which only the blind themselves can ever permanently solve." (*Paper read at Boston, June*, 1890.)

The meaning of these propositions is clear and unequivocal. They were not made in the heat of debate. They were deliberately formulated in 1868, and have been reiterated from time to time, down to 1890. The principle of action involved is either correct and therefore beneficent, or it is wrong and therefore harmful. For these reasons they should receive consideration. If correct, they can be upheld by an array of facts and the testimony of common experience. Otherwise they should be regarded as the utterances of philanthropic men, who have been led into incorrect methods by excessive zeal and self-esteem.

It is alleged that these propositions are self-evident. If so, they are intuitive; and will receive the assent of all persons and at all times. But, manifestly, there is and can be no such general assent. A moment's reflection dispels any such idea, and so the axiomatic basis on which this close association of self-chosen experts was formed is seen to be purely suppositious.

But, even if not self-evident, still the reasonableness of these propositions may perhaps be sustained by facts. In this case, the facts must show a general agreement in the views and suggestions of blind persons who have taken an active part in these matters, a general fitness in the devices suggested by them, and success in their use. We should also expect to find a general lack of conformity between the suggestions of seeing persons and those of blind persons.

Going back to the early period of activity in England, it appears that Mr. Gall, who proposed the angular upper and lower-case styles, "was induced to enter on his labors by the late Lady Jane Erskine, sister of the late Earl of Mar, *who was herself blind*." The types devised by him did not express his own preference or the "judgment of sight," so much as the preference of blind persons, by whose opinions he was evidently guided; for, in an account published by Mr. Gall in 1837, it is stated that these forms were adopted only "after a long-continued, laborious and expensive series of experiments by means of blind persons."

It is a fact well known that the great majority of blind persons believe that a raised alphabet for their use should be like the ordinary forms seen in books. Although this predilection has no sufficient basis in reason or experience, yet it dictated the adoption of the Roman forms and practically fixed the limits within which Hauy, Alston, Gall, Howe and other eminent benefactors of the blind, were confined in their efforts to create embossed literature.

Dr. Moon — also blind — devised an arbitrary system unlike the Braille, or the Roman signs, and which cannot be written.

At the first meeting of the American educators of the blind, held in 1853, Mr. Wm. Churchman and Mr. J. M. Sturtevant, both being superintendents, were appointed as a committee to report upon a system of musical notation devised by Mr. C. Mahoney, who was also blind, and who used in his system the Boston letter. Although the system of Braille had then been known some twenty years, these gentlemen, both of whom were blind, and who, as teachers and superintendents, had excellent opportunities for studying this problem, recommended Mr. Mahoney's system, in which the text was wholly in the Roman lower-case type. All of these gentlemen were educated in schools for the blind.

Dr. Armitage advocated the Braille in 1871, but in 1878 was ready to abandon it for the chimerical "international" system. In 1878, Mr. J. W. Smith advocated a modified Braille. Of this scheme Dr. Armitage, in 1886, said: "Exactly the same idea occurred to some of the members of the executive council of the British and Foreign Association during the early days of their investigation, but was soon abandoned. The same plan was adopted by the second conference of the German educators of the blind, in 1876, but was abandoned by the conference of Berlin in 1879. It is perfectly certain that the modification will not spread beyond Boston, and that it probably will, before long, fall into disuse even there."

In May, 1890, in a published letter, Mr. Smith says of the modified Braille, which, according to Dr. Armitage, had been three times rejected in Europe, that it "prevails throughout New England," and yet in the same paper, urges the merits of the original Braille upon the attention of American educators of the blind. Mr. F. J. Campbell, at the Batavia meeting in 1874, opposed the Braille, and again at Columbus, where he urged the international system. Mr. P. Lane, also blind, for many years a teacher and superintendent and an able man, said of the Moon type: "It is the most unqualified barbarism in the way of an intelligible letter that, I believe, has ever been presented to the finger, and it ought to be banished out of every institution."

At the meeting of the association in Columbus, 1878, Mr. Himmelsbach said: "I have read nearly all of these systems. The raised print I learned first. Four years ago, I commenced manual labor, and my hands grew hard very rapidly. Since then I have not been able to read common print, but can read New York Point print very readily, and have been using it in keeping my accounts, my diary, etc., and find it very useful, and much more easy to read than the Braille. I find it uses less paper, and it is easier for me to read, simply because in moving my fingers I have only to move them in one direction; but in reading the Braille, I have to move them up and down, and laterally also, so as to cover the entire space." At the same time Miss Purnell, herself blind, who had taught both Braille and the New York Point, advocated the latter system.

In all of this, there is nothing to show that the experience or opinions of blind persons in regard to the exercise of the sense of touch is concurrent, or that their views are uniform in respect to the nature of tangible literature. It is certainly impossible to find in the facts any logical foundation for these propositions.

Equally difficult is it to find any support therefor in the usages by which any investigation is conducted. The physician, physiologist or psychologist is not qualified for his work by exemplifying in himself the physical condition or mental states which form the subject of his observation and study. It is not necessary to the validity of the conclusions of an observer that the facts and conditions should be part of his own personal perceptions, sensations and consciousness; but it is necessary that he should observe, collate, compare and classify all the essential facts and conditions, and from these, proceed by a process of correct reasoning, to logical and necessary conclusions.

What would be thought of a man who should discredit Huber, the blind naturalist, as an authority on the natural history of bees, on the ground that, as Huber could not see the bees, therefore he could not have any sufficient or reliable knowledge about them? Would it be reasonable to insist that, as Saunderson was blind, therefore he could know nothing of the laws of light, optics, or of optical apparatus?

The mode of inquiry pursued in a court of law will, perhaps, afford the most striking contrast. Here the judge is presumed to know and decide the law governing any case that may arise, but he is not to decide any question of fact. The jury is not presumed to know the law, but must determine the facts. In doing this they are not allowed to testify, or furnish witnesses, and must depend wholly upon testimony from other sources. Any evidence of prejudice or bias, or any settled belief that might prevent an impartial judgment, will disqualify any person from acting either as judge or juror.

The case in question presents an entirely different aspect. A small number of persons unite and organize a self-constituted court. They assume that it is their exclusive prerogative to hear and determine the case. They lay it down as a rule that if a person can see, his sense of touch is not a trustworthy source of knowledge, and that such a person cannot be a credible witness in respect to the sense of touch; and further, that any person who can see, is from that fact incapable of observing, collecting, arranging and comparing the facts, or of forming a correct opinion thereon, or of making any suggestions that can be of value in connection with the matter. It is settled in advance that such witnesses will be discredited, and any such suitor thrown out of court.

Having been organized in this exclusive manner, with this avowed purpose, and acting in the four-fold capacity of witness, pleader, jury and judge, this novel court proceeds with its inquiry and delivers its opinions, by which all questions relating to the education of the blind are to be settled! But setting aside these considerations there is good ground for believing that the members of the council were not qualified for the task they assumed. At Columbus in 1878, Mr. F. J. Campbell, who resided in London, and, who as a member of the association was well acquainted with the council and its workings and also with the situation at Boston, said, in speaking of the New York music code, that he thought that "this system had never been thoroughly tested by blind men — unless it was by pupils at New York." In other words, down to 1878, the opponents of the system did not possess such knowledge of the application of the system in practice, as would qualify them to form a just and correct opinion upon it.

This is a most important statement, for no man living knew the exact state of the case, so far as these gentlemen were concerned, better than Mr. Campbell. If this were the fact in 1878, six years after the New York system had been published, what weight should be attached to the opinion of the council rendered against the New York system in 1871, a year before the system was completed by the publication of the musical notation?

We do not forget the purpose of the anti-progressists, so modestly expressed, " to relieve their seeing friends of the burden of a problem, which only the blind themselves can ever permanently solve." This is, indeed, generous and courageous; but we hesitate to assent. In the first place, the problem has been solved to the satisfaction of all whose judgment is untrammeled. Moreover, the opposition are already carrying a very heavy load of responsibility for not opening to their pupils and others, especially in New England, the treasures of literature and music to be found in the New York system. Let all who work in this field remember that blindness or sight will, in itself, neither qualify nor unfit a person for investigation in any department of experience or knowledge. Above all, let no one assume that one is disqualified — simply because he is possessed of all the senses and is normal.

A word also is due to the statement that "the modified Braille prevails throughout New England." Does it so prevail, and is it known and used by the blind throughout New England? And if so what has become of the original Braille, and the Boston letter? Do these also prevail? It would accord more nearly with the facts to say that neither the original Braille, the English Braille, the modified Braille, the New York system, nor the Boston letter prevails there in any degree commensurate with the demands and opportunities of the situation.

Looking over the whole course of events, and considering all the facts, it seems reasonable to conclude that if the author of the New York system had been a blind man, the opposition would have been only that which results from devotion to precedent and the sanctions of authority, and which every new thing must encounter.

In the light thus thrown upon it, is not the attitude of the British and Foreign Association and its imitators in Boston towards the New York system clearly revealed?

I trust that in this sketch it has been made clear that the New York system is the legitimate product of a regular course of development. Just as the idea suggested by Hauy, after many mutations, was brought to its limit of perfection in the Boston angular lower-case letter of Dr. Howe, so the idea suggested by Barbier and rescued from oblivion by Braille is seen in the most perfect form yet attained in the New York system. It has withstood the most adverse criticism and the severest practical tests, and, therefore, has been repeatedly approved by the educators of America, and by hundreds of blind persons who are using it. I hope, also, that the reader will be able to find in this narrative conclusive proof that the course pursued by the New York school, by the advocates of the New York system, and by the writer, has been consistent, judicious and progressive.

NEW YORK, *October* 15, 1890.

COURSE OF INSTRUCTION.

KINDERGARTEN.

The usual course is followed, the pupils being arranged in two grades.

LITERARY DEPARTMENT.

Sub-primary Grade.— Reading, spelling, number.

Primary Grade.— Reading, spelling, arithmetic.

Intermediate Grade.— Reading, spelling, geography with dissected maps, English history, object lessons.

Sub-junior Grade. — Reading, spelling, geography with maps, American history, point writing and composition.

Junior Grade.— Reading, Spelling, English history, arithmetic, grammar, geography.

Sub-senior Grade. — Arithmetic, grammar, history, geography, physiology with apparatus, rhetoric, composition.

Senior Grade.— Algebra, geometry, logic, mental and moral philosophy, science of government, political economy.

MUSIC DEPARTMENT.

VOCAL.

Junior Class.— Exercises for the control of breath and the formation and articulation of tones, with practice of scales, intervals and pieces.

Senior Class.— The same continued with part singing.

INSTRUMENTAL.

Piano, organ, guitar.

THEORETICAL AND PRACTICAL.

Staff notation, point system of tangible music, harmonic notation, harmony, counterpoint, history of music, theory and practice of teaching, piano tuning.

INDUSTRIAL DEPARTMENT.

The boys are taught cane-seating and mattress making, and with the aid of models are instructed to perform such manipulation of the piano action and strings as are incident to the art of piano tuning.

The girls are taught sewing and knitting, by hand and by machines, embroidery, crocheting, weaving cord laces, and such manipulations of needle, thread, worsted, etc., as are used in producing useful and ornamental articles, also cooking and household economy.

PHYSICAL TRAINING.

Daily class exercises for all grades.

DAILY PROGRAMME.

A. M.—8 to 8.10.

Chapel exercises.

8.10 to 9.

	No. Pupils.
Grade, sub-senior, arithmetic	24
Grade, junior, language	22
Grade, sub-junior, physiology	24
Grade, intermediate, geography	21
Grade, first primary, object lessons	19
Grade, second primary, familiar science	16
Grade, sub-primary, familiar lessons	12
Kindergarten	21
Point print and harmonic notation	11
Piano	16
Organ	1
Guitar	6
Piano tuning	7
Mattress making	2
Cane seating	2
Sewing, knitting, etc	10

9 to 9.50.

Grade, senior, arithmetic	17
Grade, senior and sub-senior, natural philosophy	20
Grade, junior, English history	23
Grade, sub-junior, arithmetic	16
Reading and spelling	51
Kindergarten	21
Harmony	11
Point print musical notation	20
Piano	8
Organ	1
Piano tuning	9
Mattress making	2
Sewing, knitting, etc	11

9.50 to 10.

Recess.

10 to 10.45.

	No. Pupils.
Grade, senior and sub-senior, rhetoric and literature	18
Grade, junior, arithmetic	24
Grade, sub-junior, arithmetic	25
Grade, intermediate, arithmetic	25
Grade, first primary, arithmetic	28
Grade, second primary, arithmetic	12
Grade, sub-primary, arithmetic	13
Kindergarten	21
Harmony and counterpoint	5
Piano	10
Organ	1
Harmony and counterpoint	15
Piano tuning	8
Mattress making	2
Sewing, knitting, etc	7

10.45 to 11.30.

Grade, senior and sub-senior, algebra	27
Grade, junior, grammar	21
Grade, sub-junior, grammar	21
Grade, intermediate, United States history	24
Grade, first primary, geography	24
Grade, second primary, object lessons	15
Kindergarten	21
Harmonic notation	9
Piano	11
Organ	1
Piano tuning	8
Mattress making	3
Sewing, knitting, etc	11

11.30 to 11.45.

Recess.

11.45 to 12.45.

Senior grade, geometry, elocution, and gymnastics	18
All other grades, elocution and gymnastics	166
Piano tuning	9
Mattress making	5
Cane seating	5

P. M.—1.45 to 2.25.	No. Pupils.
Senior singing class	83
Junior singing class, boys' division	35
Piano	15
Piano tuning	9
Mattress making	3
Cane seating	37
Hand knitting	5
Hand sewing	1
Machine knitting	2
Machine sewing	1
Crocheting	2

2.25 to 3.05.

Junior singing class, girls' division	27
Piano	17
Piano tuning	9
Mattress making	8
Cane seating	38
Hand knitting	25
Hand sewing	4
Machine knitting	3
Machine sewing	4
Crocheting	5
Cooking and household economy	4
Type-writing	13
Music history	23

3.05 to 3.15.

Recess.

3.15 to 3.55.

Piano	29
Organ	1
Piano tuning	7
Kindergarten	14
Mattress making	8
Cane seating	42
Hand knitting	25
Hand sewing	4
Crocheting	4
Cooking and household economy	4
Type writing	12
Bead work	21

3.55 to 4.30.	No. Pupils.
Piano	38
Organ	1
Piano tuning	7
Kindergarten	14
Mattress making	11
Cane seating	37
Hand knitting	25
Hand sewing	4
Crocheting	4
Cooking and household economy	4
Bead work	22

4.30 to 5.	
Piano	26
Organ	1
Piano tuning	7
Mattress making	3
Cane seating	43
Cooking and household economy	4
Arithmetic	61
United States history	24

Except from 6 to 6.30 P. M., the time from 5 to 8.30 is divided into half hours, and occupied in reading, general study, and the practice of piano, organ, guitar, and harmony lessons.

INDUSTRIAL DEPARTMENT.

The Industrial Department, *in account with* The New York Institution for the Blind, *for the year ending September* 30, 1890.

Dr.

To raw material and stock on hand September 30, 1889	$231 93
To raw material bought	983 15
To salaries and wages	1,706 81
To debts payable	136 68
	$3,058 57

Cr.

By cash received	$1,994 90
By debts receivable	461 22
By raw material on hand	344 14
Balance	258 31
	$3,058 57

LIST OF PUBLICATIONS IN NEW YORK POINT PRINT.

MUSIC CULTURE.

Wait's System of Point Musical Notation, revised edition.
Key to Wait's Musical Notation, revised.
Harmonic Notation, by William B. Wait.
Normal Course of Piano Technic, by William B. Wait (in press).
Musical History, by G. A. McFarren.
The Great German Composers, three volumes.
The Standard Operas, by G. P. Upton, two volumes.
National Music of the World, Chorley.
Stories About Musicians, by Mrs. Ellet, three volumes.
Organ Method, by John Stainer, two volumes.
Violin Method, Louis Schubert, first part (second part in press).
Guitar Method, Carcassi.
How to Teach Bands, by F. J. Keller.
Tuning the Piano-forte.
Tuner's Guide.
Notes on Tuning, by J. A. Simpson.

PIANO STUDIES.

Primary and Progressive Studies.

L. Köhler,	op. 190; easy and instructive pieces.
C. Czerny,	op. 261; 101 preparatory lessons.

Scale Studies — Book 1.

Al. Schmidt,	op. 16, Nos. 3, 4.	Berens,	op. 61, No. 1.
Duvernoy,	op. 176, Nos. 1, 13, 14, 21.	Le Couppey,	op. 26, Nos. 1, 2.
		Köhler,	op. 115, Nos. 1, 2.
Döring,	op. 8, Nos. 9, 10.	Lemoine,	op. 37, No. 24.
Bertini,	op. 29, No. 23.		

Arpeggio Studies — Book 1.

Czerny,	op. 599, Nos. 84, 87, 90, 94, 100.	Duvernoy,	op. 120, Nos, 4, 7, 8.
		Czerny,	op. 636, No. 7.
Köhler,	op. 115, " 9, 10.		

TRIPLET STUDIES — BOOK 1.

Lemoine,	op. 37, Nos. 8, 16.	St. Heller,	op. 45, Nos. 23, 24.
Krause,	op. 2, No. 2.	Köhler,	op. 167, " 1, 2, 6, 8.
Bertini,	op. 100, " 7.	Köhler,	op. 175, No. 8.

LEGATO STUDIES — BOOK 1.

Köhler,	op. 151, Nos. 7, 8, 9, 10.	Bertini,	op. 100, No. 12.
		Döring,	op. 8, " 11.
Köhler,	op. 175, " 1, 3, 6.	Spindler,	op. 58, " 1.

VELOCITY STUDIES — BOOK 1.

Berens,	op. 3, No. 6.	Mendelssohn,	op. 72, No. 5.
Le Couppey,	op. 26, " 12.	Heller,	op. 47, Nos. 12, 18.
Czerny,	op. 636, Nos. 20, 21.	Döring,	op. 8, No. 8.
Czerny,	Etudes de la Velocity, No 11.		

TRILL STUDIES — BOOK 1.

Köhler,	op. 151, Nos. 1, 2.	A. Krause,	op. 2, Nos. 1, 3.
L. Röhr,	op. 24, " 1, 2, 3, 4, 5.		

PIANO PIECES.

Bach, J. S.	Twelve preludes.*
" "	Fifteen two-voiced inventions.*
" "	Bourree in G.
" "	Prelude and Fugue No. IV, from the Well-tempered Clavier.*
" "	Allemande, Courante, and Gavotte, from the G. Maj. Suite.*
Bach-Mason	Gavotte, D. Maj.
Baumfelder, F.	Op. 270.

No. 1. Sandman Knocks.
" 2. The Stork Has Come.
" 3. The Old Ruin.
" 4. The Vintage.
No. 5. The Young Officer.
" 6. The Music Box.
" 7. The Setting Sun.
" 8. Grandma's Tale.

Beethoven, L. .... Op. 49.	Sonatinas, Nos. 1 and 2.
Blakeslee	Two short pieces, Crystal Fountain Waltz, May Party Dance.

Burgmüller, F., twenty-five progressive pieces:

No. 1. The Candor.
" 2. The Arabesque.
" 3. The Pastoral.
" 4. The Little Reunion.
" 5. Innocence.
No. 6. Progress.
" 7. The Clear Stream.
" 8. The Graceful.
" 9. The Chase.
" 10. The Delicate Flower.

No. 11. The Blackbird.
" 12. The Farewell.
" 13. Consolation.
" 14. Styrienne.
" 15. A Ballad.
" 16. The Gentle Complaint.
" 17. The Prattler.
No. 18. Inquietude.
" 19. Ave Maria.
" 20. Tarantelle.
" 21. Harmony of the Angels.
" 22. Barcarolle.
" 23. The Return.
" 24. The Swallow.
No. 25. The Chevaleresque.

Chopin, F...... Polonaise .... Op. 40.... No. 1.
" " ...... Waltz* .... " 64.... " 1.
" " ...... Waltz* .... " 34.... " 1.
" " ...... Waltz* .... " 34.... " 3.
" " ...... Nocturne, No. 12* .... " 37.... " 2.
Chopin–Liszt... Polish Song .... " 74.... " 2.
Clementi, M.... Sonatina .... " 36... " 6.
Geibel............... Gavotte Allemande.
Giese, T .... Op. 298. Six melodious pieces.

No. 1. Tarantelle.
" 2. Kinderkränzchen (Children's Feast).
" 3. Grossmütterchen Singt (Grandmother's Song).
No. 4. Die Beiden Fischerknaben (The Two Fisher Boys).
" 5. Gavotte.
" 6. Trauermarsch (Funeral March).

Goldner, W.................. Gavotte Mignonne.
Gurlitt, C .... Aus der Kinderwelt (from the Child-World), op. 74. Twenty pleasing character pieces.

No. 1. Morning Song.
" 2. The Friendless Child.
" 3. Cradle Song.
" 4. In School.
" 5. Slumber Song.
" 6. Santa Claus Song.
" 7. Christmas.
" 8. Merry Company.
" 9. The Tin Soldier's March.
" 10. The Bold Rider.
No. 11. The Doll's Dance.
" 12. Under the Linden Tree.
" 13. The Sick Little Brother.
" 14. In the Garden.
" 15. The Snow Man.
" 16. A Winter Day.
" 17. The Ring Dance.
" 18. The Sorrowful Hour.
" 19. Evening Prayer (Prelude and Choral).
No. 20. The Gentle Child and the Little Ruffian.

Handel, G. F... Six Fugues.
" " ... Harmonious Blacksmith, with variations.
Heller, S....... Tarantelle .... Op. 85.... No. 2.
" .... Curious Story.

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*Associateship Music.

Hiller, F.	Rhythmical Studies*	Op. 56	Nos. 7, 11.
Hoffman C.	Romance, "On the Heights."		
Ketterer, E	Saltarelle	" 266.	
Kontski, A.	Polonaise	" 271.	
Kuhlau, F. E	Sonatina	" 20	No. 1.

Lichner, H., twelve characteristic pieces.

No. 1. Entreaty.
" 2. Contemplation.
" 3. Longing.
" 4. After School.
" 5. To the Playground,
" 6. Solitude.
No. 7. Elegy.
" 8. Scherzo.
" 9. Polonaise.
" 10. Rondo.
" 11. Italian Romance.
" 12. Aria.

Loeschhron, A., "Aus der Kinderwelt," op. 96, twelve numbers.

No. 1. Sunday Morning.
" 2. The Little Postillion.
" 3. It Was Only a King.
" 4. In the Boat.
" 5. Entreaty.
" 6. The Cuckoo.
No. 7. The Hunt.
" 8. The Cradle Song.
" 9. A Little Dance.
" 10. The Little Soldier.
" 11. Catch Me.
" 12. Good Night.

Lysberg, C. B. . . La Baladine . . . . Op. 51.
Mendelssohn F. Op. 72, six Christmas pieces.
" . Songs without words:

Op. 19, No. 1. Sweet Souvenir.*
" 19, " 2. Regret.
" 19, " 3. Hunting Song.*
" 19, " 4. Confidence.
" 19, " 5. Restlessness.
" 19, " 6. Venetian Gondellied.
" 30, " 7. Contemplation.
" 30, " 8. Without Repose.
" 30, " 9. Consolation.
" 30, " 10. The Estray.
" 30, " 11. The Brook.
" 30, " 12. Venetian Gondellied.
" 38, " 13. The Evening Star.
" 38, " 14. Lost Happiness.
" 38, " 15. The Poet's Harp.
" 38, " 16. Hope.
" 38, " 17. Passion.
" 38, " 18. Duetto.
Op. 53, No. 19. On the Sea Shore
" 53, " 20. The Fleeting Clouds.*
" 53, " 21. Agitation.
" 53, " 22. Song of Triumph.
" 53, " 23. Sadness of Soul.
" 53, " 24. The Flight.
" 62, " 25. May Breezes.
" 62, " 26. The Departure.
" 62, " 27. Funeral March.
" 62, " 28. Morning Song.
" 62, " 29. Venetian Gondellied.
" 62, " 30. Spring Song.
" 67, " 31. Meditation.
" 67, " 32. Lost Illusions.
" 67, " 33. Song of the Pilgrim.
" 67, " 34. The Spinning Song.*

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*Associateship Music.

Merkel, G.	Tarantelle	Op. 92.
Mozart, W.	Sonata, No. 6.*	
Moszkowski, M.	Serenata.	
Ravina, H.	Etude de Style	Op. 14, No. 1.

Rummel, J., Les Allegresses Enfantines, six easy pieces.

No. 1. Valse.
" 2. Polka.
" 3. Polka Mazurka.
No. 4. Tyrolienne.
" 5. Galop.
" 6. Schottische.

Schubert-Schultz	Minuet, D. Major.	
Scharwenka, X.	Polish Dance	Op. 3.
Schumann, R.	Album for the Young	" 68.
" "	Bird as a Prophet	" 82, No. 8.
" "	Novelette, No 1	" 21.
" "	Romance in F sharp *	" 28.
Schumann, G.	Tarantelle	" 11.
Spindler, F.	Twelve songs without words	" 44.
" "	Drawing-room Flower	" 17.
Tschaikowsky, P.	Song without words in F.	

ORGAN MUSIC.

Bach	Sonata in E flat, No. 1.*
Batiste	Offertory, op. 23, No. 2.
Guilmant	Marche Religieuse.*
Handel	Concerto in B flat, No. 6.*
Mendelssohn	Sonata in C minor, No. 2.*
"	Prelude and Fugue, op. 37, No. 2.*
Merkel	Christmas Pastorale.*
Rink	Postlude No. 147, from "Practical Organ School."
Stainer	Organ method.

GUITAR MUSIC.

Guitar Method, by Carcassi.
Arpeggio Exercises.
Caprice, by King.
Charming Gavotte, by Le Thiere.

HYMN TUNES.

Long Meter.

Creation,
Duke Street,
Germany,
Hamburg,
Harmony Grove,
Hebron,
Leyden,
Loving Kindness,
Luther,

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* Associateship music.

Mendon,
Migdol,
Missionary Chant,
Old Hundred,
Park Street,
Rockingham,
Rothwell,
Solid Rock,
Tallis Evening Hymn,
Uxbridge,
Ward.
Windham,

Common Meter.

Antioch,
Arlington,
Azmon,
Balerma,
Bemerton,
Christmas,
Colchester,
Clarendon,
Coronation,
Cowper,
Dundee,
Downs,
Geer,
Manoah,
Marlow,
Mear,
Noel,
St. Martyn's,
St. Ann's,
Varina,
Woodstock,
Warwick,
Woodland.

Short Meter.

Boylston,
Carlisle,
Comber,
Cranbrook,
Dennis,
Gorton,
Haydn,
Handel,
Laban,
Leighton,
Newark,
Olney,
Olmutz,
Shirland,
State Street,
Thornton,
St. Thomas,
Silver Street,
Whithington.

L. P. M., Nashville. C. P. M., Meribah.
H. M., Lenox.
6s and 4s.—America, Italian Hymn, Olivet.
6s and 5s.—Morning.
7s.—Pleyel's Hymn, Solitude.
7s and 6s.—Amsterdam, Missionary Hymn, Jerusalem the Golden, Webb.
8s and 7s.—Autumn, Harwell, Faben, Sicily.
11s.—Portugese Hymn.
12s.—Scotland.

Selections for publication will continue to be made from the following list, which comprises the music prescribed as the basis of examination for associateship in the American College of Musicians:

PIANO.

Bach	Select pieces (edited by Kullak).
"	Fugues in C minor, D major, B flat major. (Wohltemperirte Klavier, Nos. II, III, IV, of the Tausig edition.)
Beethoven	Sonata in A flat, op. 26, C minor, op. 13.
Chopin	Nocturnes, Waltzes, Mazurkas.
Hiller, F.	XXIV Rhythmical Studies, op. 56.
Liszt	Rhapsody No. 11, Rigoletto, Liebesträume.
Mendelssohn	Rondo Capriccioso, op. 14; Songs Without Words, Nos. 1, 3, 20, 34.
Mozart	Sonatas.

Schumann	Romanza in F sharp major, op. 28.
Schumann	Traumeswirren, Grillen, Warum, op. 12.
Schumann	Kreisleriana, Nos. 2, 4.

ORGAN.

Class I, Sonata Form.

Bach	Sonata in E flat, No. 1.
Handel	Concerto in B flat, No. 6.
Mendelssohn	Sonata in C minor No. 2.

Class II, Polyphonic Style.

Bach	Prelude and Fugue in E minor, Peters' edition, Book III, No. 10.
“	Fantasie and Fugue in C minor, Peters' edition, Book III, No. 6.
“	The “little” G minor Fugue.
Mendelssohn	Prelude and Fugue, op. 37, No. 2.
Merkel, G	Canon in F sharp, op. 39, No. 3.
Whitney, S. B.	Canon in G major.

Class III, Free Style.

Best	Pastorale, op. 38, No. 6.
Guilmant	March Religieuse.
Merkel	Christmas Pastorale.
Silas	Andante in C major.
Smart	Andante in G, No. 1.
“	Andante in A, No. 2.
“	Andante in E minor, No. 3.

LITERATURE.

LANGUAGE.

Alphabet Sheets; Wait's Point Primer; Point Readers, Nos. 1 to 8; Westlake's 3,000 Word Speller; Cæsar's Commentaries (Latin); Allen's Latin Vocabulary, three volumes; A Class-book in Etymology; Talks with Cæsar (Latin).

NATURAL SCIENCE.

Gage's Elements of Physics, three volumes; First Steps in Scientific Knowledge, by Paul Bert, three volumes.

POLITICAL SCIENCE.

Constitution of the United States and Declaration of Independence.

HISTORY AND BIOGRAPHY.

Barnes' Brief History of the United States, three volumes; Miss Young's Young Folks' History of France, two volumes; Warren

Hastings; Barnes' Primary History of the United States; Barnes' General History (Political), three volumes; Barnes' General History (Civilization), (in press).

MATHEMATICS.

Multiplication Tables; Robinson's Written Arithmetic, three volumes; Captions from Wells' Plane Geometry (demonstration and cuts omitted); Book of Diagrams from Wells' Plane Geometry.

GEOGRAPHY.

Maury's Physical Geography, two volumes; Essentials of Geography, Fisher.

TRAVELS AND ADVENTURES.

Tales of Adventure, two volumes; Tales of Discovery, two volumes.

NOVELS AND PROSE DRAMAS.

Picciola, two volumes; Undine; selections from Tales from Shakespeare, by Charles and Mary Lamb, two volumes.

POETRY AND POETIC DRAMAS.

Snow-bound, Whittier; Idyls of the King, Enid, Elaine, and Guinevere, by Tennyson; selections from Longfellow; selections from Holmes; selections from Whittier; The Tempest, Shakespeare.

CHILDREN'S BOOKS.

Rab and His Friends; Rill from the Town Pump and Mrs. Bullfrog; Feathertop; Jack the Giant Killer; Puss in Boots; Tales from the Arabian Nights; Æsop's Fables; selections from Grimm's Fairy Tales; Hans Christian Andersen's Fairy Tales.

RELIGIOUS.

Dairyman's Daughter; Bible Blessings; Pilgrim's Progress; Selections from Thomas a' Kempis; Woodman's Nannette and Other Tales; In His Name; Looking Unto Jesus; Stalker's Life of Christ; Wee Davie and A Trap to Catch a Sunbeam.

MISCELLANEOUS.

Irving's Sketch-book, three volumes; Self-help, three volumes; selections from Chapters on Animals; Emerson's Conduct of Life, two volumes.

LIST OF PUPILS.

MALES.

Ackerman, Joseph
Arnold, James H.
Austin, William B.
Bailly, Eugene
Baker, John T.
Barnett, George B.
Bressee, Nelson
Bliss, Peter
Brown, Lyman
Bollenbach, Jacob
Buckley, John
Burgmyer, John P.
Blumentritt, Charles
Callahan, John T.
Canavan, Thomas
Cannon, Percy W.
Clarke, John
Clements, Chas. F.
Collins, Cornelius
Conners, Edward
Cooper, James R.
Cronin, Patrick
Crowley, James J.
Cruser, Leslie
Curtis, Joseph
Davidson, Donald F.
Dietz, Daniel
Dietz, Louis
Dimond, James
Dippold, Adam
Donovan, James J.
Donovan, John
Dorsett, John J.
Edward, Ernest
Etherington, John G.
Enderlin, William H.
Eichberg, Herman
Ennis, James
Flaherty, Edward
Freutenreich, Frank
Friedman, Samuel
Gardner, Patrick
Gebert, Charles
Green, Harry
Gilmartin, Michael
Gorse, William G.
Groesch, Martin
Gross, Frank
Hall, Harry
Hammond, Charles
Haley, Walter B.
Hanssen, Charles W.
Hargan, Archibald E.
Harmon, George
Harty, William
Harvey, Robert J.
Heisler, Charles J.
Hill, Charles J.
Hoagland, Alvah W.
Hussy, Patrick
Hutchins, William E.
Hodgins, Cornelius
Irwin, Frank
Jacob, Herman
Kane, Jerome
Kelly, James
Kelly, Lawrence
Kerrigan, William
Kingsburg, Emanuel
Kuhn, Joseph
Kullman, Leon
Leahy, Thomas
Lennon, Joseph
Loftus, John J.
Lynch, Francis
Maher, Patrick
Mahle, Charles W.
Malcolm, William
McKenzie, William
McKenna, Wm.
McBride, Joseph
McCue, John
McGuirck, Peter
Mick, Andrew
Morrisey, George
Muehlebach, Jos.
Mulkachey, Patrick
Mulhollin, James
McAlister, Wm. C.
Monahan, Wm. A.
Nestor, John
Ostrander, Harry G.
O'Neill, James
O'Neill, John J.
O'Brien, John A.
O'Brien, Francis J.
Osborn, Edward
Perkins, Richard
Preiss, Frederick

Probst, Jacob
Reilly, John
Rennie, Randolph
Reynolds, John
Ricker, John
Richmond, Arthur
Roper, William T.
Robinson, John H.
Robinson, Harford
Robinson, Wm. H.
Rogers, H. Sidney
Rohrman, Fred.
Sahl, Albert W.
Sanger, Joseph
Schnapel, Louis
Stark, Ernest F. C.
Schank, J. DuBois
Sweeney, Peter
Sherry, Bernard
Schlegel, Chas. A.
Sinsheimer, Abram
Sipp, Harry G.
Smith, Edgar H.
Shongood, Julius
Schroeder, Theo.
Schott, William
Schuermann, Louis
Syfert, Richard
Thompson, Walter
Topping, Everett
Torbeck, Geo. M.
Tschudi, Henry
Tynan, Andrew
Tyner, Robert E.
White, Benjamin
Wigmore, John
Winkelman, Fred'k.
Willson, Lester
Wittenberg, Nathan
Worth, John
Wiseley, A. J.

FEMALES.

Allen, Grace
Blackburn, Ruth
Blagbrough, Emma
Bradley, Mary A.
Brasseur, Eva
Bahr, Florence C.
Barry, Mary
Bastianelli, Mary
Beatty, Madelin
Bennett, Jane
Bennett, Nellie
Birtles, Mary E.
Bowne, Mary E.
Carey, Anna
Casanova, Louisa
Clark, Della
Clarke, Beryl H.
Cohen, Ida
Cooney, Mary
Dangler, Harriet P.
Dibbs, Lilly
Diedrick Rosa
Donovan, Mary
Doris, Ellen
Dowd, Margaret J.
Drumgoold, Mary
Drum, Margaretta
Duffy, Anna
Eliason, Emma J.
Feldmann, Augusta
Feldmeier, Rhoda
Finn, Catherine
Flynn, Mary
Gamble, Anna
Gerson, Lottie
Greiss, Thersa
Griffin, Sarah A.
Goodkind, Lillie
Guff, Sarah
Hanley, Mary E.
Hefferen, Mary
Henderson, Minnie
Henger, Theresa B.
Henry, Nellie
Herbert, Fannie
Hieber, Rose C.
Hilton, Ester A.
Hinchman, Delphine
Hohn, Amelia
Hunt, Mary
Hutchison, Char. E.
Jarschoff, Sarah
Kelly, Sarah J.
Koenig, Amelia
Kreischer, Anna
Kilburn, Katie
King, Grace H.
Leyden, Margaret
Lichtenberg, Helen
Mahon, Ellen
McLennon, Mary
McMillan, Emma
McCormick, Mary
McDonald, Alice C.
McDonough, M. J.
McHugh, Florence
Meirdeircks, Amelia
Miner, Mary
Mishka, Mary E.
Neuhut, Leah.
Norton, Catherine H.
Offerman, Sophia W.
O'Neill, Margaret
O'Reilly, Agnes
Palmer, Lois
Phair, Catherine
Phillips, Emma
Pross, Jessie

Ricker, Frances K.
Ritzer, Lizzie
Rush, Mary
Stafford, Mary
Sagefka, Matilda
Schenk, Mary A.
Sheedy, Catherine
Schlegel, Lizzie J.
Shea, Annie
Silk, Mary E.
Smith, Louisa
Smith, Mary
Smith, Minnie
Stickles, Mary
Sieling, Helena
Struthers, Effie M.
Sullivan, Mary A.
Sullivan, Rachel F.
Shoemaker, Lizzie
Scullin, Caroline
Thompson, Marion
Vandevoort, Grace
Walter, Annie
Weigand, Elsie
Witzel, Katherine
Willis, Mary
Yeomans, Julia

STATE OF NEW YORK.

TWENTY-SECOND ANNUAL REPORT

OF THE

TRUSTEES

OF THE

WILLARD STATE HOSPITAL,

FOR THE YEAR 1890.

TRANSMITTED TO THE LEGISLATURE JANUARY, 1891.

ALBANY:
JAMES B. LYON, STATE PRINTER.
1891.

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O. G. SHEARMAN, Esq., Penn Yan.

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Hon. S. H. HAMMOND, Geneva.

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SAMUEL G. VAN VLEET, Esq., Ovid.

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F. B. PACKER.

STATE OF NEW YORK.

No. 16.

IN ASSEMBLY,

JANUARY, 1891.

TWENTY-SECOND ANNUAL REPORT

OF THE

TRUSTEES OF THE WILLARD STATE HOSPITAL.

To the Legislature of the State of New York:

We have the honor to submit herewith the Twenty-second Annual Report of the Trustees of the Willard State Hospital, for the year ending September 30, 1890.

Very respectfully yours.

STERLING G. HADLEY.
F. O. MASON.
S. R. WELLES.
S. H. HAMMOND.
A. S. STOTHOFF.
J. A. FLANAGAN.
O. G. SHEARMAN.
S. G. VAN VLEET.

Report of the Trustees.

To the Legislature of the State of New York:

The undersigned trustees of the Willard State Hospital, have the honor to submit their twenty-second annual report for the year ending September 30, 1890, with the usual statistical and other information, and such recommendations as appear to them worthy of your consideration.

The treasurer's annual report shows the amount of expenditures for the fiscal year. The vouchers, which are in the hands of the treasurer, showing in detail these expenditures, have been carefully examined by the auditing committee of this board and found to be correct. There are also duplicates of all vouchers filed with the Comptroller.

The report of the medical superintendent, appended herewith, shows in detail the operations of the various departments of the hospital for the year, and is respectfully commended to your notice.

The new work and extraordinary repairs provided for by legislative appropriations have progressed in a satisfactory manner. The superintendent's house has been completed and furnished, and has been occupied since August first. The farm houses have been put in good condition and all necessary repairs made. A new shed for farmer's use has been built on the north side of the new barn. The center building of detached group No. 1 has been improved by the addition of another story, and part of the north and west walls have been taken down and the foundations rebuilt. Many of the walls of the ward buildings of the same group, which had become unsafe, have also been rebuilt and the foundations relaid. Although only a small part of the appropriation asked for last year for the alterations and repairs of this group was granted, the changes which have been made have greatly increased the appearance, usefulness and durability of the group, and the walls have all been put in a safe condition. One wall of the day-room No. 4 was also rebuilt.

The new pump, the necessity for which was pointed out in our last report, will soon be in place, and a source of anxiety and danger will be thereby removed.

The Telford road and cement walk have been completed as far as the branch, a distance of a mile, thus connecting the most of the buildings by a permanent road and walk. Many minor repairs have been made in the wards, mention of which will be found in the superintendent's report.

It is a source of gratification to be able to report a low cost of maintenance during the year, notwithstanding the failure of the ice and potato crops, which caused a considerable increase in expenditures.

With the close of the fiscal year the system of caring for the chronic insane in asylums specially devoted to their care came to an end, and hereafter, under the new law, we are to treat and care for both acute and chronic cases in the district assigned to us by the board for the establishment of State asylum districts. It would, therefore, appear to be an appropriate time to cast a look backward and review the history of the institution and its work.

Subsequent to the creation and opening of the State Lunatic Asylum at Utica, in 1843, the subject of increasing and improving the accommodation for the insane of the State of New York engaged the attention of the Legislature from time to time. In 1844 Dorothea L. Dix presented a memorial to the Legislature, representing the condition of the insane in county alms-houses and other places, as she found it on a personal inspection. In 1855 a convention of superintendents of the poor memorialized the Legislature to erect additional asylums. In the year 1856 a special committee of the Senate, created for the purpose, made a personal inspection of the asylums and poor-houses, and presented a report with recommendations to the Legislature of 1857. During this period and following it, successive Governors of the State, the managers of the State Lunatic Asylum and its superintendent, Dr. Gray, as well as the State Medical Society, urged upon the Legislature the wretchedness and neglect that existed in the care of the insane in county-houses and the necessity of enlarging the accommodations for the increasing number of the insane. While these various movements were continuous in respect to time, they were not connected. The State did not act, and the various suggestions were unheeded.

In the year 1863 the State Medical Society appointed Dr. Charles A. Lee, Dr. Sylvester D. Willard and Dr. George Cook a committee to confer with the medical committee of the Senate and Assembly on the subject of the "appointment of a Commissioner of Lunacy, whose duty it should be to examine personally into the condition of the insane confined in the public and private lunatic asylums and alms-houses, and report their condition to the next Legislature, with such suggestions for their relief as may be deemed proper." In pursuance of this action the Legislature, by an act passed April 30, 1864, devolved upon the secretary of the State Medical Society, Dr. Sylvester D. Willard, the duty of procuring the information desired and furnishing a report. The law directed that a series of questions likely to elicit the greatest amount of information on the subject should be prepared, printed, and transmitted to each county judge in the State:

*"It directed the county judge, on the reception thereof, to appoint a competent physician, a resident of the county, to visit the county poor-house, or institution where the insane poor are kept, and to examine into the condition and treatment of the insane inmates, and to transmit the results of the examination. It directed me, thereupon, to condense the information so received and transmit the same to your honorable body."

Fifty-two physicians of as many counties furnished replies to the questions propounded, and the information

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* Report of Dr. Willard.

received furnished the basis of the report and suggestions of Dr. Willard to the Legislature of 1865. In his message to the Legislature, Governor Fenton, in calling attention to the condition of the insane poor, thus alluded to the forthcoming report of Dr. Willard: "The Legislature of 1864 directed an investigation into the condition of the insane poor confined in the various county poor-houses. A report, by Dr. Willard, will be duly presented, showing the deplorable condition of this most unfortunate class. There are in fifty-five counties confined in poor-houses, or poor-house asylums, not including New York and Kings, 1,345 lunatics, nearly all of whom are incurable; many have become, and others are fast becoming incurable, from inefficient care and treatment. The time has arrived when legislative provision should be made. The propriety of establishing an institution for *incurables* — an institution that shall relieve county authorities from the care of the insane — should be deliberately considered.

"More than one-fourth of this number of insane are capable of some labor. To what extent that labor, organized and systemized, might be made productive to the maintenance of an institution, under well-directed superintendence, is likewise worthy of consideration."

A bill was reported by the committee, of which Dr. W. H. Richardson was chairman, creating a second State lunatic asylum, to be known as the *Beck Asylum for the Insane.* Dr. Willard died April 2, 1865. In a biographical notice published in the transactions of the State Medical Society for 1866, Dr. Franklin B. Hough pays a deserved tribute to the work of Dr. Willard in investigating the condition of the insane poor, his energy in collecting information, and his zeal in promoting the establishment of a new asylum for their care. His biographer remarks: "His death made a marked impression upon the public mind, and his prominent position (Surgeon-General of the State of New York) suggested a further mark of honor. The bill then in the Senate was amended, and became a law with the name changed to *The Willard Asylum for the Insane.*"

The title of the bill as passed was: "An act to authorize the establishment of a State Asylum for the Chronic Insane, and for the better care of the insane poor, to be known as the Willard Asylum for the Insane." Dr. John P. Gray, Dr. Julian T. Williams and Dr. John B. Chapin were appointed commissioners by Governor Fenton to locate and erect the asylum. In deciding upon a location the commission was directed to "first seek for and select any property owned by the State, or upon which it had a lien" — referring by implication to the State Agricultural College in the town of Ovid. Soon after their organization the commission adopted a proposition that the plan of the Willard Asylum should comprise a central administration block, wings for the hospital care of excited patients and such others as required for any reason frequent visitation and supervision, and groups of detached blocks for the reception and cure of harmless, industrious and manageable patients.

The commission having obtained a title to the State Agricultural College in December, 1865, submitted plans to Governor Fenton in January, 1866, which were subsequently approved by him. At this period Dr. Gray withdrew from the commission, and Dr. Lyman Congdon was appointed in his place. During the summer of 1866 a contract was made for the erection of the center building, one section of the north and south wings, and the buildings in the rear of the center, and work was commenced.

In accordance with powers conferred upon the Governor, James A. Bell, of Jefferson; Judge Allen, of Washington; Sterling G. Hadley, John E. Seeley, James Ferguson, of Seneca, and Genet Conger, of Ontario, were appointed trustees of the asylum, in 1867. In January, 1869, Dr. John B. Chapin was appointed medical superintendent, and accepted the office April first.

The title and the several sections of the organic act of the asylum indicate the plain intent of the Legislature to change the system which was then in existence of providing for recent cases in a State asylum, and chronic and incurable cases in poor-houses. The act creating the Willard Asylum required that all cases, both recent and chronic, of the indigent class needing the treatment or care of an asylum for the insane, should, on the completion of the new asylum, be placed under State supervision and custodial care. The Willard law indicated a great advance of public sentiment toward the better care of the insane poor. The plan prepared by the commission contemplated the aggregation of patients and classes according to their condition, and a plan which would permit the economical enlargement of the asylum by the erection of additional blocks. While the State had thus entered upon a comprehensive system for the care of the insane, plans were adopted which were a decided departure from those which, previously, had been regarded as most suitable, and even essential. Three years before the asylum was ready for occupation, the manner in which the purpose of the Legislature was to be executed was foreshadowed in the following language, which may be reproduced here: "The plan of buildings at Ovid comprises a hospital for the paroxysmal, excited, and greatly demented, with groups of detached blocks, plain and inexpensive in their construction, for those whose condition is such as to permit of their being employed in agricultural, horticultural, or other industrial pursuits, with benefit to themselves and the asylum. It is believed that the plan of building here indicated will materially reduce the cost of construction; allow of a system of classification and general management which will considerably diminish the cost of maintenance; at the same time that the health and happiness of the patients will be in the highest degree promoted. This plan also permits of expansion in such a manner as to obviate the objections to a large establishment under one roof. The institution is, in short, designed to supersede the miserable system of providing for the chronic insane in the poor-houses, and by placing them in an establishment adapted to their condition, care for them in accordance with medical and humane ideas, develop their industrial capacities, and demonstrate the fact that they can be properly provided for at a cost per week which will place such care within the reach of every county, thus opening the way to the complete abandonment of county-house receptacles for such chronic insane as may need the custodial appliances of an asylum for the insane."

"For the first time the important principle is recognized that the chronic insane poor are, equally with the acute recent cases, entitled to proper care and treatment under State supervision; and any State which neglects to provide for all of this unfortunate class, by the establishment of a humane, comprehensive system of care, is guilty of injustice and partiality."

Three principal objects were sought to be accomplished:

First. The care of the insane of the chronic and incurable class in a State institution, and their transfer from county poor-houses to State supervision.

Second. The modification and change of the usually approved hospital plans, so as to reduce the cost of construction materially, and the erection of supplemental or detached buildings for the care of mild and harmless cases; and

Third. The aggregation of numbers in order to divide the cost of support among a large number, so that the average charge might be reduced.

The commissioners having reported the buildings in course of construction so far advanced toward completion as to be in readiness for occupation during the year, the Legislature in May, 1869, abolished the commission, devolving its powers and duties upon a new board of trustees, which was created to supersede the board first appointed. The new board consisted of John E. Seeley, Sterling G. Hadley, Samuel R. Welles, William A. Swaby, of Seneca; Darius A. Ogden, of Yates; George J. Magee, of Schuyler; Francis O. Mason, and Genet Conger, of Ontario.

In September a circular was issued to the superintendents of the poor, announcing that the asylum would be ready for the reception of 250 patients on the twelfth of October. Applications for more than 500 patients were received. On the fourteenth of October the first patients were received, three of whom where brought in chains.

In 1870 the Legislature made an appropriation to extend the north wing, and to alter the Agricultural College building for the accommodation of patients — known thereafter as the *Branch*. In 1871 the south wing was extended, and a group of five detached blocks was commenced and completed in 1872. The second group was occupied in 1876; the third group in 1877; and the fourth group in 1880.

In 1884 the trustees recommended that new buildings be erected for the special and better care of the feeble and filthy cases; but it was not until 1886, that the Legislature authorized the erection of a group of detached blocks as an infirmary for men, and a further modification of the building known as the *Branch*, to be thereafter used as an infirmary for women. The principal features of the one-story infirmary wards are the allotment of the space to day wards and large dormitories, with a few single rooms, large associate dining-rooms, and an administration block — all calculated to furnish an efficient service, both night and day.

Additions of land have been made to the original purchase from time to time. The farm of the asylum now comprises 907 acres.

The total expenditure for the erection of buildings of all kinds, land, furniture, water-works, and all purposes, except salaries and maintenance, has been $1,419,828. The capacity of the asylum is 1,938, and the average cost of construction, equipment, land, etc., has been $732 per patient. The whole number admitted from the opening of the asylum October 12, 1869, to September 30, 1890, was 5,015.

The following table shows the average cost of support since 1872, excluding salaries of the staff of medical officers and clothing. The table is of interest in showing the relation that numbers bear to the cost of support, and how much the products of a large farm and the labor of patients may reduce it:

YEAR.	Daily average of patients.	Weekly cost.
1872	564	$3 15
1873	727	3 09
1874	827	3 09
1875	938	2 96
1876	1,076	2 83
1877	1,227	2 87
1878	1,340	2 71
1879	1,430	2 63
1880	1,565	2 72
1881	1,695	2 67
1882	1,759	2 64
1883	1,748	2 65
1884	1,790	2 61
1885	1,835	2 37
1886	1,835	2 26
1887	1,810	2 27
1888	1,892	2 49
1889	2,004	2 25
1890	2,052	2 39

The following persons have served as trustees of the asylum: John E. Seeley, reappointed 1869, resigned 1872; Genet Conger, reappointed 1869, resigned 1877; Sterling G. Hadley, reappointed 1869, still in office; Darius A. Ogden, appointed 1869, died 1889; George J. Magee, appointed 1869, resigned 1884; Samuel R. Welles, appointed 1869, still in office; William A. Swaby, appointed 1869, term expired 1882; Francis O. Mason, appointed 1869, still in office; George W. Jones, appointed 1873, died October 17, 1886; James F. D. Slee, appointed 1877, term expired 1882; Diedrich Willers, Jr., appointed 1882, resigned 1889; S. H. Hammond, appointed 1882, still in office; A. S. Stothoff, appointed 1884, still in office; James A. Flanagan, appointed 1889, still in office; O. G. Shearman, appointed 1889, still in office; S. G. Van Vleet, appointed 1890, still in office.

Dr. Chapin resigned the office of medical superintendent September 1, 1884, to accept the appointment of physician-in-chief of the Pennsylvania Hospital for the Insane, and was succeeded by Dr. P. M. Wise, formerly the senior medical officer. Dr. Wise resigned early in the present year to accept the superintendency of the St. Lawrence State Hospital at Ogdensburg, N. Y., and was succeeded by Dr. Chas. W. Pilgrim, for several years the senior medical officer at Utica.

On the creation of the Willard Asylum, its object and plans became the subject of wide-spread professional discussion, but practical results have taken the place of speculation and theory. It has been demonstrated that it is practicable to reduce the usual cost of construction of asylums for the insane, and their subsequent maintenance; to abolish mechanical forms of restraint; and to enlarge their personal liberty and means of employment.

It is our belief that the management of the Willard Asylum did much towards securing the passage of the State Care Act, but as the superintendent suggests, if we are to gain a reputation among hospitals equal to that which we gained among asylums, a number of changes will be necessary in our plant. The changes deemed most important are fully set forth in the superintendent's report and need not be repeated here. Many of these changes are necessitated by the difference in the class of patients which will hereafter be received, while others are recommended by the State Commission in Lunacy, in order to place around our charges safeguards against fire, the enemy dreaded most of all by asylum authorities. Our wards which have been intended for the chronic class are notably deficient in decoration and lacking in many things which all hospitals should possess. The buildings built from ten to twenty years ago have received but little attention in the way of unusual repairs, and each year adds striking proof of the necessity of action in that direction.

The dining-rooms in the main building are far too small to accommodate the usual number of patients, and a great saving in service and waste, as well as a great addition to comfort, would be secured by converting the three dining-rooms on each floor into one, as suggested by the superintendent. This we consider one of the most pressing needs of the institution.

The repairs in the laundry should also be made with as little delay as possible, as the present plant is inadequate for our needs. Fire-escapes are needed on several buildings, and the extension of the electric-light plant so as to include all the buildings would add much to the security and comfort of the institution. These changes have been recommended by the State Commission in Lunacy.

The amusement hall is far too small to accommodate the proper number of patients in an institution as large as this, and it should be enlarged at an early day. The question of amusements is considered one of great importance by those experienced in the care and treatment of the insane, but with our present building its full benefits can not be obtained.

The detached buildings are very bare and cheerless, and need much in the way of furniture and repairs. All these needs are explained at length in the superintendent's report, and it only remains for us to urge the necessity of the repairs and improvements there outlined.

The water supply to the main building is quite inadequate for ordinary purposes, and the only way to overcome it will be by putting in a separate main from the reservoir for the supply of detached buildings Nos. 2 and 4.

Nearly all the steam pipes need recovering, and as the cost will be considerable it would seem proper that an appropriation be granted for the purpose.

To recapitulate, we present a tabulated list of the purposes for which appropriations are asked and the amounts thereof:

For repairs, alterations and furniture in main building	$9,000 00
For new dining-rooms	14,500 00
For alterations in laundry	6,500 00
For fire-escapes	9,600 00
For extension of electric-light plant	9,200 00

For enlarging amusement hall	$3,200 00
For general repairs and furniture in detached buildings	8,500 00
For water main to detached buildings 2 and 4	1,500 00
For felt covering for steam pipes	3,000 00
Total	$65,000 00

We have given all these items our careful consideration, and present them as actual needs, and assure your honorable body that, in asking for the appropriations for the purposes named, we do so with the sincere purpose of effecting the greatest good with the greatest economy compatible with the management of a hospital for the insane.

At the date of our last annual report, the late medical superintendent, Dr. P. M. Wise, had resigned his office, to take effect upon the appointment of his successor.

The authority and responsibility of appointing his successor was by law placed with this board. In view of the magnitude of the institution, and the large number of the insane to be cared for in it, it was deemed essential to its future success that such successor should possess not only extensive medical attainments, but administrative ability only to be acquired by lengthy experience in asylum management. These qualifications we believe we have secured in Charles W. Pilgrim, M. D., late the senior medical officer at the Utica State Hospital, who accepted our appointment to the medical superintendency of this hospital, to take effect on the 1st day of February, 1890, and has since that date been in charge thereof as such superintendent.

Other changes in the resident official staff were produced by the resignations of Drs. J. Montgomery Mosher and Allen M. Smith. The vacancies thus caused were filled by the appointment of Drs. B. Wible Walker and Thomas E. Bamford.

Since the date of our last annual report the Governor has appointed Mr. Samuel G. Van Vleet, of Ovid, Seneca county, a trustee of this hospital, to succeed Hon. Diedrich Willers, who resigned in the latter part of 1889.

We are again pleased to testify to the fidelity with which the officers of this hospital have performed their duties during the year past, and to commend the generally faithful and harmonious coöperation of the attendants and other employés.

Respectfully submitted.

STERLING G. HADLEY.
FRANCIS O. MASON.
S. R. WELLES.
S. H. HAMMOND.
A. S. STOTHOFF.
J. A. FLANAGAN.
O. G. SHEARMAN.
SAMUEL G. VAN VLEET.

Report of the Treasurer.

To the Trustees of the Willard State Hospital:

The treasurer of the Willard State Hospital respectfully submits the following statement of his receipts and payments for the year ending September 30, 1890:

RECEIPTS.

To cash on hand September 30, 1889	$30,160 66
To cash received from State Comptroller, chapter 570, Laws of 1889	28,000 00
To cash received from State Comptroller, chapter 295 Laws of 1890	3,500 00
To cash received from State Comptroller for salaries of officers	14,525 00
To cash received from treasurers of counties and cities for current expenses	274,046 76
To cash received for interest and costs from Westchester county	2,080 30
To cash received from overpaid bills	43 18
To cash received from steward for the sale of hides, pelts, tallow, rags, etc	3,222 49
To cash received from rents	359 25
To interest received on deposits	1,193 34
Total	$357,130 98

PAYMENTS.

By bills paid from appropriation, chapter 570, Laws of 1889, as per vouchers rendered Comptroller	$17,200 79
By bills paid from appropriation, chapter 295, Laws of 1890, as per vouchers rendered Comptroller	8,076 59
By bills paid for salaries of officers as per vouchers rendered Comptroller	14,600 00
By bills paid from the county account, as audited by auditing committee for current expenses	275,861 06
By balance on hand	41,392 54
Total	$357,130 98

J. B. THOMAS,
Treasurer.

Report of the Superintendent.

To the Trustees of the Willard State Hospital:

Gentlemen.— In compliance with the requirements of the law, and with your regulations, the following report of the operations of the hospital for the year ending September 30, 1890, is respectfully submitted:

	Men.	Women.	Total.
Number of patients in the hospital September 30, 1889	966	1,064	2,030
Admitted during the year	119	106	225
Whole number under treatment	1,085	1,170	2,255
Discharged recovered	9	4	13
Discharged improved	26	20	46
Discharged unimproved	11	9	20
Discharged not insane	5	......	5
Died	51	72	123
Whole number discharged	102	105	207
Remaining September 30, 1890	983	1,065	2,048

General History.

Admissions.

Of the 225 patients admitted, ninety-four were brought from their homes, sixty-four were transferred from county asylums, forty-six were sent from State hospitals, fifteen were brought from jails, three were sent from Brigham Hall, and three had been inmates of the Soldiers' and Sailors' Home.

Discharges.

Of the forty-six patients discharged as improved, thirty-eight were taken home, two were discharged by the court upon writs of *habeas corpus*, one went to a county asylum, and five eloped. Of the twenty patients discharged as unimproved, eleven were taken home, five were returned to county asylums, and four eloped. Bonds guaranteeing safe custody, peaceable behavior and comfortable maintenance without further public charge, were furnished for five of the patients discharged as improved, and for two of those who were discharged as unimproved.

The mental manifestations leading to the commitment of the five men discharged as not insane, were due to intemperance.

Number Under Treatment.

The greatest number of patients in the institution at any one time during the year was 2,075, the smallest was 2,028, and the daily average was 2,052.

As the normal capacity of the hospital is only 1,938, it will be seen that our wards have been taxed to their utmost during the year just past. To provide for the excess, temporary cots, with woven wire springs and hair mattresses, have been put up nightly in the corridors,— more than a hundred having been thus cared for each night throughout the year.

At the close of the year there still remained an excess of 110 patients over our permanent number of beds, but it is expected that as the result of the districting of the State becomes more and more felt, this excess will be gradually lowered, thereby increasing the comfort of those remaining, as well as making the results of treatment more apparent.

Percentage of Recoveries.

The rate of recoveries upon the admissions was only six per cent. This at first glance may appear unusually small, but when it is remembered that only ninety-four cases of the 225 admitted came from their homes, while the remainder were transferred, as chronic cases, from other institutions, it will be seen that the percentage of recovery is more than doubled if new cases only are considered. Indeed, when we look still further and learn that only thirty-nine cases of the 225 admitted had been insane less than one year, we find that the number of recoveries on what may be fairly called recent cases is nearly thirty-three and one-third per cent. Added to this, not a few of the forty-six discharged as improved might have been included in the recoveries, had not the custom of putting all doubtful cases among the improved been strictly adhered to. Statistics of recoveries must always be questionable, for what might be called a recovery by one physician would, perhaps, be placed among the improved by another. This is a criticism which can not be overcome, for no standard can be found to be used in estimating cures.

Percentage of Deaths.

The number of deaths appears large, but it was slightly less than six per cent. on the daily average population, which is lower than the average rate of mortality in hospitals for the insane. This is all the more surprising when we remember that in the majority of our cases the mental trouble has been of long standing, and in many instances the patients have come to us enfeebled by other disorders.

Occupation.

The percentage of patients employed during the year was 35.5. This rate is not so large as in some institutions, but it may be accounted for by the fact that about twenty-five per cent. of our patients are too feeble to do work of any kind, and also by an almost entire absence of mechanical pursuits. As the greater part of our occupation for patients is out of doors, upon the farm, gardens and roads, the natural result is a much smaller percentage in winter than in summer, and a marked decrease in the general average.

Restraint.

It is well known that for some years past only a minimum of restraint has been used in this institution, but it has never been entirely discarded. While I am not willing to claim that it is never justifiable to use mechanical restraint, it affords me pleasure to be able to state that during the past six months its use has not been resorted to in a single instance. With our large number, our crowded wards, and the character of our cases, this result is certainly cause for congratulation.

Suicide.

Our long immunity from suicide was broken on the fourteenth day of May last, by the death of A. T., of Canandaigua, from self-inflicted wounds. She had been a patient in the hospital for seven years and had never manifested suicidal tendencies. At the time of the commission of the act she was occupying a dormitory that she had slept in for months, her actions had been the same as usual during the day, and there was nothing to suggest that she contemplated suicide. The wounds were inflicted in the throat and neck with pieces of glass, obtained by breaking a window light. The coroner decided that an inquest was unnecessary.

Night Service and Wards for the Sick.

The night service has been improved by the increase of an additional watchman and two nurses. Hospital wards have been instituted in each department, where all the sick are congregated and cared for by special nurses. By this method it is possible to have a nurse in constant attendance upon the sick, which could not always be the case if they were distributed in the various wards of the several departments.

School for Patients.

The school for patients was conducted during the winter and spring months by Professor Asa Boothby, with an average attendance of thirty-three. During the winter four entertainments were given by the pupils and greatly enjoyed by the other patients. Although definite results are difficult to estimate from this form of occupation, I know from experience, that, aside from taking a certain number of patients out of the wards each day, which of itself is a thing to be desired, the mental stimulation obtained in the school-room occasionally marks the beginning of recovery.

Training School for Nurses.

Lectures were delivered during the season to two classes of nurses. The advanced class was in charge of Dr. Nellis, while the junior class was given systematic instruction by Dr. Bishop. No effort was made to make these lectures scientific, the aim being merely to awaken sufficient interest in the subject of nursing to make profitable the practical instruction given on the wards.

My experience has been that training schools often fail because the lecturers make the mistake of thinking that their listeners should be told such things as only students of medicine can comprehend. It is much better to tell them a few simple facts rather than confuse them with scientific theorizing.

Uniforms for Nurses.

The nurses, both male and female, have been neatly uniformed, much to their own advantage as well as to that of the institution. Any one who has had experience in the matter will unhesitatingly admit that many advantages are derived from uniforming the nurses aside from the mere question of improved appearance. Innovations always meet with objections, but even those who objected most strongly at first soon became entirely satisfied with the change.

Nurses' Home.

To my mind the crying need in a hospital of this size is a separate building for the use of nurses, something like the nurses' home attached to Bellevue Hospital, where the nurse can go after the day's work is done and rest, free from responsibility and care, until the next day's work begins. The value of such a plan has been demonstrated by our experience at the Branch or

Infirmary for Women, where the night service is distinct from the day, and where there are rooms for each class of nurses away from the wards. There are even more reasons why this would be found beneficial at the main building, where the most disturbed patients are cared for. Nurses whose rest is broken by the noise of maniacal patients cannot be expected, in the words of Browning: "To get up each morning to their work cheerful and fresh as ever." More than half a century ago the good Dr. Conolly said: "Everything that affects the attendants will be found to exercise a secondary influence on the patients; their health, their circumstances, their instruction, their mode of living in the asylum, their diet, the comfort of their sleeping-rooms, are all matters of much importance, generally attracting too little attention and sometimes entirely overlooked in the arrangements of an asylum."

The plan of having a detached building for the use of nurses has been tried with gratifying results at Prestwitch, England, and the superintendent of that institution bears strong testimony to the advantages thus gained for both patient and nurse.

Amusements.

The various entertainments during the winter season were under the immediate direction of Dr. Mosher, who managed them with tact and ability. Many of them were by home talent, and their preparation called for a large amount of time and labor. In addition to the dramatic entertainments, concerts, lectures, readings, etc., there was a weekly dance, thus giving some form of entertainment for the patients during no less than eighty evenings of the year. In this connection, I desire to call the attention of the board to the smallness of our amusement hall. It will accommodate only 400 persons, when it should have room for twice as many. It was built when the institution was only about one-half its present size, and at a time when amusements for the insane did not occupy the place in asylum therapeutics that they do to-day. The difficulties are partly overcome by repeating each performance, and allowing certain ones to go one night and others the next. Such an arrangement, however, is expensive when outside talent is obtained, as it necessitates a two-night engagement, and often when that cannot be done much disappointment is caused to those who have to remain on the wards. At the dances the smallness of the hall is particularly apparent. The building could be enlarged considerably at an expense of about $3,200, and I would recommend that it be done as soon as funds can be obtained for the purpose.

During the summer months an entirely new departure was made by Dr. Bishop, who organized a series of weekly open-air concerts, in imitation of the popular summer-night concerts which are given in many cities. They were very successful, and the hundreds of patients arranged in chairs on the lawn, listening to the music, recitations and songs, presented a remarkably interesting sight. A base ball nine was also organized by Dr. Bishop, and occasional games were enjoyed during the summer.

It is with pleasure that I am able to report that owing to the generosity of Hon. J. B. Thomas, it was possible, early in the spring, to equip a band of sixteen performers with brass instruments. During the summer months excellent weekly concerts were given at the different buildings for the benefit of the patients. Mr. Thomas, who has been a liberal contributor to the amusement fund for some years past, places the hospital and its patients under renewed obligations by this latest generous act.

The following is a statement of the Thomas Annuity Fund, established for the purpose of furnishing entertainment for the patients for the year ending September 30, 1890:

Cash on hand September 30, 1889	$411 82
Cash received from Mr. Thomas	250 00
Cash received from H. C. Silsby, Esq	40 00
Cash received from all other sources	172 71
Total receipts	$874 53
Bills paid on superintendent's vouchers	713 21
Cash on hand September 30, 1890	$161 32

Changes in the Medical Staff.

On July first, Dr. Allen M. Smith resigned his position on the staff to accept an appointment in the medical service of the United States Army. The vacancy thus created was filled, on the same date, by the appointment of Dr. B. Wible Walker, of New York. Dr. Walker, who had served upon the New York City Asylum staff at Blackwell's Island for a year, and had also acted for some months as clinical assistant at the Bloomingdale Asylum, has, since his appointment, shown himself well qualified for his work.

It is with regret that I record the resignation of Dr. J. M. Mosher, who left us on the last day of September to accept the position of first assistant physician in the St. Lawrence State Hospital at Ogdensburg. Dr. Mosher, during his connection with this institution, displayed abilities of a high order and manifested unusual fitness for his work.

Therefore, it is a pleasure to know that his departure from Willard does not mean that his services are to be lost to the State.

The vacancy thus created has been filled by the appointment of Dr. Thomas E. Bamford, of the New York City Asylum, who comes to his work well recommended.

Mr. H. Schoonmaker and Mr. W. J. Kernan, medical students, acted as clinical assistants during the summer months and did much to lighten the labors of the medical staff. Mr. Schoonmaker rendered valuable assistance in the band, as well as in the choir and at musical entertainments.

I desire also to express my appreciation of the services of Mr. F. B. Packer, apothecary, who, by industry and interest in his work, has established an enviable reputation among his associates.

During the winter Dr. Emma Putnam was granted a three-months' vacation for the benefit of her health. The temporary vacancy created by her absence was satisfactorily filled by Dr. Eleanor McAllister, of Newburgh, N. Y.

In this connection I would call the attention of the board to the smallness of our medical staff. In other institutions of similar character there is an average of one physician to every 150 patients, while with us each physician has to care for about 300. I know from experience that no one man can give proper attention to 300 cases when a considerable percentage of that number is of the acute class. Besides the two daily visits to the wards there are letters to write, visitors to see, accurate case records to keep, new cases to admit, and a thousand and one other things to fill up the physicians time, leaving but little opportunity, even when there is inclination, for scientific work.

The Commission in Lunacy has recommended that there be an assistant physician in each detached group of buildings, and if this recommendation be carried out, at least two additional physicians will be needed.

Finances.

The financial condition of the hospital is the subject of special reports by the treasurer and steward, but I can not refrain from mentioning the fact, that despite the partial failure of the potato crop and the complete failure of ice, which resulted in a considerable increase in expenditure, the cost of supporting the patients was but little in excess of the previous year, and even less than it was during 1888.

Credit is due for this successful showing to the care and judgment displayed by the steward in his purchases and distribution of supplies.

Statistics.

It has frequently been said, and with justice, that asylum statistics were misleading and valueless for comparison, on account of the entirely different methods employed by the different institutions. In order to overcome this criticism as far as possible, the State Commission in Lunacy has recommended a set of tables which all State hospitals must adopt. This is an important step in the right direction, and can only result in good to all who are interested in the study of insanity. It will, at the same time, go far toward giving justice to the different institutions. As pointed out in the beginning of this report, no system can be found which will make the records of recoveries entirely reliable, but it is believed that the tables presented this year go far toward overcoming previous defects. For the careful compilation of these tables I am indebted to Dr. Nellis.

The same changes will soon be made in the financial records, by the adoption of a uniform method of bookkeeping.

IMPROVEMENTS.

Detached Group No. 1.

Last year an appropriation was asked for to rebuild detached group No. 1, but only a small part of the amount asked for was granted. With that amount, however, the condition of the group has been much improved by the addition of another story to the central building, and by rebuilding several of the walls of the other buildings, the foundations of which had become unsafe. Although the changes have not been as extensive as were desired, the building has been made safe and improved in as many respects as the limited means at our command made possible.

Detached Group No. 4.

The north wall of the day-room of the first ward in detached group No. 4 has also been rebuilt and put in safe condition.

New Pump.

Much cause for anxiety has been removed by the addition to our old plant of a new steam pump and boiler. As was pointed out in the last report, any accident to the old pump would have left us helpless, and without water for ordinary use or for protection against fire. The recent addition, making the plant double, has overcome this source of anxiety and possible danger.

Telford Road.

The unremitting labor of Mr. Kitson, and the patients under his control, has brought the Telford road to completion between the Main Building and the Branch, a distance of a mile. The Main Building is now connected with the shops, barns, detached buildings Nos. 1 and 3, the infirmary for men and the Branch or infirmary for women, by a permanent stone road and cement walk. Only one familiar with the old road, which for several months in the winter and spring was almost hub-deep with mud, can appreciate the value and convenience of this improvement. Aside from all other considerations, the cement walk is an improvement of great practical importance, as it affords a delightful promenade for the patients during all seasons of the year, and enables them to obtain out-of-door air and exercise even in inclement weather.

Telephone Service.

The telephone service has been greatly improved by the introduction of the central system, with switch board, in place of the club system which was formerly in use. This change renders private conversation possible, and besides greatly improves transmission.

Improvements in Wards.

Many minor changes have been made in the wards. The old heavy ward furniture has been nearly everywhere loosened from its attachment to the floors, and wherever practicable, replaced by that of more modern make; many pictures have been purchased for the wards; a great deal of painting has been done, and two men have been kept busy for several months repairing floors, putting in window-stops, tightening base-boards, etc. These repairs, small in themselves, when extending over a plant as large as ours amount to a great deal in the aggregate, and though making but little show, often entail more thought and trouble than the construction of new work of much greater magnitude.

New Shed.

A new shed for the farm implements and wagons has been built and the farm-houses known as the Meddick and Patrick houses have been put in repair.

Superintendent's Residence.

The superintendent's house has been completed and furnished, and since August first, the pleasures of a detached residence have been enjoyed.

A portion of what were the superintendent's apartments in the main building has been assigned to the first assistant physician, and the officers' dining-room has been removed from the office floor to the floor above. The lower dining-room has been changed into a library and board-room, and needed office-room has thus been obtained. Other changes in the administration building are contemplated, and some of them are now under way.

NEEDS FOR ANOTHER YEAR.

The great step in advance taken by the Commission in Lunacy when it secured the passage of the State Care Act (Chapter 126, Laws of 1890), completely changed the character and scope of this institution, which was soon to be also changed in name by the passage of General Curtis's humane bill (Chapter 132, Laws of 1890). It is no longer merely a place of custody for the incurable insane, but has become a State Hospital in fact as well as in name, to which both acute and chronic cases must be admitted. If we are to take equal rank with the other State hospitals certain changes both in plant and management will be necessary. Our wards, which have admirably answered the purpose for which they were originally intended, can not, in the light of modern ideas, be considered suitably arranged or appropriately equipped for the care and treatment of the acute insane. Either extensive changes should be made in the wards in the Main Building or a separate hospital building, for the accommodation of about fifty of each sex, should be erected in close proximity to the administration building. While there can be little doubt that the erection of a hospital in accordance with modern ideas would be the better plan, its cost would be much greater than that of making alterations in our old wards which would make them suitable for the treatment of the acute insane. In view, therefore, of the large demand upon the funds of the State at the present time in providing for the insane, I would suggest that instead of asking for an appropriation for a new building, we ask for only enough to make the necessary changes in our present plant. Some of the rooms now occupied as dormitories should be fitted up as sitting-rooms; nearly all the wards are in need of new ceilings; many of the floors are badly decayed and much plastering and painting should be done. In addition to all this more and better furniture should be purchased. An appropriation of $9,000 would be none too much for the work. The dining-rooms, of which there is one on each ward, are far too small to seat the usual number of patients, and in some instances extra tables have to be set on the wards; they are also dark, gloomy and unattractive. By putting up an addition to the first, second and third wards, there would be need of only one dining-room where there are now three. Besides the convenience and comfort which would be secured by such a change, there would be a great saving in food and in service, as not more than half the number now engaged in dining-room work would then be necessary. Another advantage would be that women, who do such work much better than men, could be put in charge of the dining-rooms in the men's division. If this change were made, additional sitting-rooms, which are greatly needed, would also be obtained. It is estimated that the cost would be about $14,500 for both sides of the house.

With properly equipped hospital wards for the treatment of acute cases, there would be no reason why Willard should not maintain among State Hospitals the enviable reputation which she has held among asylums for the past twenty years. But, in order to do justice to ourselves and to the insane of our district, we must be alive to the fact that the character of our institution has changed, that its scope has been broadened, and above all that we are not only to care for incurable cases, but are to cure those which are curable. It will be readily admitted that when the law compels (as it does now) all the insane of the counties of Cayuga, Wayne, Livingston, Allegany, Steuben, Chemung, Schuyler, Tompkins, Ontario, Yates and Seneca to be sent here, it would be unjust in the extreme to deprive such persons of the chances of cure which they might obtain in other hospitals. It is of vital importance, both to us and to the residents of our district, that we have placed at our disposal facilities for treating acute cases equal to those of other State institutions. In the care of chronic cases our standard has been high and our record second to none, but it can not be denied that we have been, and are still, behind some of our sister institutions in many of the means which alienists of to-day consider necessary for the proper treatment of the acute insane. These changes will, of course, call for increased expenditures, but it should be remembered that it is much cheaper in the end to cure a curable case in a few months, even though it cost somewhat more, rather than to let such a case drift into chronicity and become a burden upon tax-payers at a smaller rate for a dozen years.

I am no advocate of "cathedral architecture" or of extravagance in the care of the insane, but I do believe that if we are to do our duty to suffering humanity within our district, and to the taxpaying community as well, there should be no sin of omission laid at our door when the question of cure is at hand.

Alterations in Laundry.

Our laundry, which has been added to from time to time to meet the exigencies of the institution, is in need of extensive repairs. The ironing and assorting rooms are on the second floor, and in addition to the danger from fire and the inconvenience of access, the former room is much too small to enable us to properly perform the amount of work required. I would, therefore, suggest that in making these changes a one-story addition be made to the south side of the drying-room, to be used as an ironing-room. The drying-room needs overhauling, and if the needed changes were made only about half the space now used would be necessary. We could then make use of the abandoned half as an assorting-room, thus bringing the whole laundry plant on the ground floor. The old assorting-room would make an excellent sewing-room, which is much needed. These changes I consider very important, and would suggest that an appropriation of $6,500 be asked for to make the alterations, in accordance with the plans submitted.

Protection Against Fire.

In order to carry out the recommendations made by the Commission in Lunacy, in regard to the placing of outside fire-escapes on every building of more than one story in height, no less than $9,600 will be required. The addition of a wire protection to the two spiral fire-escapes already erected, is also recommended. As many of the recommendations of the Commission in Lunacy in regard to protection against fire as possible have been carried out. Additional fire-pails and grenades have been placed in many of the wards, the side-wall gas jets have been protected by wire screens, steps have been put in front of the windows leading to the two spiral fire-escapes which we now have, and the bath-tubs are nightly filled with water, and pails placed near them, in readiness for immediate use. Extra precaution has also been taken by the appointment of an additional night watchman at detached group No. 1, thus permitting the watchman at No. 3 to devote his whole time to that group. In this connection the Commission recommends the use of electricity, to the exclusion of gas, except in case of emergency. If this desirable change be made, and our present plant extended so as to include all buildings, an appropriation of $9,200 will be necessary. There can be no question as to the superiority of electricity for lighting institutions of this kind, and our experience is such as to justify us in asking for this appropriation.

New Water Main.

The water pressure in the Main Building is so poor that it is often impossible to get a sufficient supply on the third floor for ordinary purposes. On bathing days this defect is particularly apparent. By putting in a separate main from the reservoir to detached buildings Nos. 3 and 4, the Main Building, from which the supply is now obtained, would be relieved to a sufficient extent to overcome the existing difficulties. An appropriation of $1,500 would be sufficient to do the work.

Steam Pipe Covering.

The steam pipes, nearly everywhere, need new felt covering, and an appropriation of $3,000 will be required to do the work in a satisfactory manner.

General Repairs Needed in Detached Buildings.

Nearly all the detached buildings, with the exception of the Infirmary and the Branch, are greatly in need of repairs and a better supply of furniture. Many of the wards which are now unattractive and gloomy could be made much pleasanter at no very great outlay. This expense, however, when all the buildings are considered, would be more than should be paid out of the ordinary repair fund. Eight thousand five hundred dollars would, I think, put the buildings in good repair. The time has come when, in the natural course of events, each year's repairs must be greater than the preceding, or else the buildings will go to decay and soon become irreparable.

Steamboat.

When the more urgent needs of the hospital have been attended to to it is to be hoped that the Legislature will see fit to grant an appropriation for the purchase of a steam yacht large enough to carry from sixty to seventy-five persons. Such an acquisition, I am sure, would be of therapeutical value, as well as a source of great pleasure to our patients. Living as we do upon the shores of one of the most beautiful lakes in the country it seems a pity that our stricken population should not have opportunity to thus enjoy its beauties and health-giving breezes.

ACKNOWLEDGMENTS.

Religious Services.

I desire to acknowledge our indebtedness for weekly religious services and for frequent visitations to Rev. Father O'Connell, Rev. C. W. MacNish, Rev. Wm. Jones and Rev. Henry A. Porter.

The Generosity of Newspapers.

As in previous years, our acknowledgments are due to the editors and publishers of the following periodicals, who have generously supplied the patients with their publications:

Rochester Morning Herald (daily),
Seneca County Courier,
Seneca County News,
Havana Journal,
Geneva Advertiser,
Geneva Gazette (two copies),
Ovid Independent,
Watkins Express.
Geneva Courier,
New York Tablet,
Waterloo Observer,
Watkins Democrat,
Farmer Village Review,
Penn Yan Express,
Seneca Falls Reveille (two copies),
Illustrated Catholic American,
Catholic Review,
The Catholic,
Irish World,
Connecticut Catholic,
Seneca County News Letter,
Deaf-Mute's Journal,
Dundee Record,
Union Springs Advertiser,
Trumansburg Sentinel.

Other Contributors.

Our thanks are due for various contributions of reading matter, assistance at entertainments, etc., to the following named persons: Mrs. Inez Steele, Hon. J. B. Thomas, Col. C. D. Miller, Mr. Thomas P. Hause, Mrs. D. P. Nelson, American Tract Society, Messrs. F. B. Foster & Bro., Mrs. Folwell, Mrs. N. E. Wattles, Rev. C. W. MacNish, Miss Nellie Cranse, Mr. Joseph Brewer, Mrs. Sarah Johnson, Mrs. E. K. Clark, Mr. W. H. Wells, State Charities Aid Association, Mrs. J. E. Cranse, Mr. O. C. Cooper, Mr. and Mrs. Herman Leonard, Miss Mary H. Goldsmith, Mr. John Keating, Dr. D. R. Burrell, Dr. C. V. H. Morris, Dr. M. H. Picot, Mrs. J. D. Thomas, Mr. H. K. Armstrong, Mrs. Edward Van Vleet, Professor John L. Morris of Cornell University, Ithaca, N. Y., W. D. Burrall & Son, Waterloo, Hobart College Glee and Mandolin Club, and the Misses Hortense Osgood, Jennie Rappleye, Jettie March, Mamie Van Horn, Carrie P. Jones, and Grace Seeley.

Our farm stock was added to through the kindness of Mr. George A. Thayer, of Worcester, Mass., and Dr. P. Collier, Director of the

New York State Agricultural College, Geneva, N. Y.—the former sending us one Chester White pig, and the latter one Duroc pig and two Holstein calves.

Conclusion.

To the attendants and other employés, who have faithfully discharged their arduous and often unpleasant duties; to Captain Gilbert, upon whose business sagacity so much of the financial success of the institution depends; to the members of the medical staff who have rendered me loyal assistance; and, above all, to you, gentlemen of the Board of Trustees, who have cheered me with words of encouragement, and aided me with valuable counsel in my efforts to keep Willard in the proud position gained by Drs. Chapin and Wise, my warmest thanks are given.

CHAS. W. PILGRIM,
Medical Superintendent.

WILLARD, N. Y., *November*, 1890.

STATISTICAL TABLES.

STATISTICAL TABLES.

Table No. 1.

General statement, September 30, 1890.

Date of opening	1869
Total acreage of grounds and buildings	907
Value of real estate, including buildings	$1,352,700 00
Value of personal property	174,155 06
Acres of farm land under cultivation	700
Capacity of institution	1,938
Daily average number under treatment	2,052
Balance remaining on hand September 30, 1989	$30,160 66
Receipts during year from State (for officers' salaries, extraordinary improvements, etc.)	46,025 00
Received from counties	274,046 76
Received from all other sources	6,898 56
Total receipts during year	326,970 32
Total expenditures during year	315,738 44
Balance remaining on hand October 1, 1890	41,392 54
Weekly per capita cost on current expenditure, inclusive of clothing	2 58$\frac{1}{2}$
Weekly per capita cost on current expenditure, inclusive of clothing and officers' salaries	2 72$\frac{1}{10}$
Weekly per capita charge to counties, exclusive of clothing and officers' salaries	2 25
Maximum rate of wages paid attendants:	
Men, per month	35 00
Women, per month	22 00
Minimum rate of wages paid attendants:	
Men, per month	16 00
Women, per month	10 00
Proportion of day attendants to average daily population	1 to 9
Proportion of night attendants to average daily population	1 to 82

Percentage of daily population engaged in some kind of useful occupation	35.5
Estimated value of farm and garden products during year	$39,125 96
Estimated value of articles made or manufactured by patients during the year	20,921 27

TABLE NO. 2.

Showing movement of population for the year ending September 30, 1890.

	Men.	Women.	Total.
Remaining October 1, 1889	966	1,064	2,030
Admitted during the year	119	106	225
Total number under treatment during year	1,085	1,170	2,255
Average daily population	981	1,071	2,052
Capacity of institution	902	1,036	1,938
Discharged during the year:			
As recovered	9	4	13
As not recovered	37	29	66
As not insane*	5	......	5
Died	51	72	123
Whole number discharged during the year	102	105	207
Remaining September 30, 1890	983	1,065	2,048

NOTE.—Elopements included in number recovered or not recovered.

* The five discharged as "not insane" were inebriates.

TABLE No. 3.

Showing assigned causes of insanity in the 225 cases admitted during the year ending September 30, 1890.

	Men.	Women.	Total.
Moral:			
Adverse circumstances, including business anxieties and pecuniary difficulties	2	......	2
Domestic trouble, including loss of relatives and friends	1	4	5
Mental anxiety and worry, not included above, and overwork	5	2	7
Religious excitement	3	1	4
Physical:			
Accident or injury to head	3	......	3
Cerebral disease	2	2	4
Change of life (menopause)	......	3	3
Epilepsy	6	5	11
Fever (typhoid)	1	......	1
Hereditary influences ascertained (direct and collateral)	10	17	27
Intemperance in drink and narcotics*	16	......	16
Lactation	......	1	1
Old age	2	5	7
Other bodily diseases or disorders	7	17	24
Parturition and puerperal state	......	2	2
Self-abuse (sexual)	7	......	7
Sunstroke	6	......	6
Unascertained	47	46	93
Uterine and ovarian disorders	......	1	1
Venereal disease	1	......	1
Total	119	106	225

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* Five of these cases were inebriates and admitted and discharged as "not insane."

TABLE NO. 4.

Showing forms of insanity in those admitted, recovered and died during the year ending September 30, 1890.

FORM.	Admitted.	Recovered.	Died.
Mania, acute	18	4	4
Mania, subacute	8	1	....
Mania, recurrent	2	....	1
Mania, chronic	33	6	20
Melancholia, acute	11	2	....
Melancholia, subacute	10	....	....
Melancholia, chronic	37	....	15
Alternating (circular) insanity	......	....	....
General paralysis	3	....	8
Dementia, primary	....	....	....
Dementia, senile	15	....	11
Dementia, terminal	63	....	51
Epilepsy	10	....	9
Imbecility	8	....	2
Idiocy	2	....	2
Not insane*	5	....	....
Total	225	13	123

* Includes cases of alcoholism, opium habit, etc.

TABLE NO. 5.

Showing the number and percentage of recoveries and deaths, based upon the average daily population since October 1, 1888.

YEARS.	Average daily population.	Recoveries.	Percentage.	Deaths.	Percentage.
1889	2,004	20	.9	113	5.6
1890	2,052	13	.6	123	5.9

Table No. 6.

Showing the causes of death of those who died during the current year and since October 1, 1888.

CAUSE OF DEATH.	During the Year.			Since October 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Acute nephritis	2	......	2	2	......	2
Acute tuberculosis	......	2	2	......	2	2
Asphyxia from lodgment of food in pharynx	2	......	2	2	......	2
Asthenia following fracture of femur	......	1	1	......	1	1
Bronchitis	1	......	1	1	......	1
Cancer of breast	......	......	......	......	1	1
Cancer of liver	......	......	......	......	1	1
Cancer of stomach	......	......	......	1	......	1
Cancer of uterus	......	2	2	......	2	2
Cancer of vulvæ	......	1	1	......	1	1
Cellulitis of leg	1	......	1	1	......	1
Cerebral apoplexy	2	9	11	8	14	22
Chronic nephritis	1	......	1	3	......	3
Cirrhosis of liver	......	......	......	1	......	1
Debility of old age	3	8	11	11	12	23
Diabetes mellitus	1	......	1	1	......	1
Dilatation of the heart	......	1	1	......	1	1
Dysentery	1	1	2	1	2	3
Epilepsy	1	7	8	6	10	16
Empyema	1	......	1	1	......	1
Enteritis	1	1	2	2	1	3
Erysipelas	......	......	......	......	1	1
Exhaustion from acute mania	......	1	1	......	1	1
Exhaustion from acute melancholia	......	......	......	2	......	2

TABLE NO. 6 — (*Concluded*).

CAUSE OF DEATH.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Exhaustion from chronic mental disease	7	10	17	13	17	30
General paralysis of the insane	6	2	8	14	3	17
Locomotor ataxia	......	......	......	1	......	1
Meningitis	1	1	2	2	1	3
Peritonitis	......	......	......	1	......	1
Phthisis pulmonalis	14	14	28	21	33	54
Pneumonia	4	4	8	12	4	16
Pulmonary abscess	......	1	1	1	1	2
Pulmonary gangrene	1	......	1	1	......	1
Rupture of heart	......	1	1	......	1	1
Rupture of internal carotid artery, due to carcinoma of neck	......	1	1	......	1	1
Senile gangrene	......	......	......	1	......	1
Suicide	......	1	1	......	1	1
Strangulated hernia	......	......	......	......	1	1
Typhoid fever	......	1	1	1	1	2
Valvular disease of the heart	1	2	3	6	5	11
Total	51	72	123	117	119	236

The average duration of the insane life of those who died was eight years.

TABLE No 7.

Showing the first and subsequent admissions of those admitted during the current year and since October 1, 1888.

NUMBER OF ADMISSIONS.	DURING THE YEAR.						SINCE OCTOBER 1, 1888.					
	CASES ADMITTED.			TIMES PREVIOUSLY DISCHARGED RECOVERED.			CASES ADMITTED.			TIMES PREVIOUSLY DISCHARGED RECOVERED.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
First	110	92	202	.....	.....	....	243	212	455	.....	.....	.....
Second	5	9	14	1	2	3	11	16	27	2	3	5
Third	4	3	7	1	1	2	6	2	8	2	2	4
Fourth or more	.....	2	2	.....	.....	....	.....	3	3	.....	.....	.....
Total cases	119	106	225	2	3	5	260	233	493	4	5	9
Total persons	123	108	231	.....	.....	....	267	239	506	.....	.....	.....

TABLE No. 8.

Showing hereditary tendency to insanity in cases admitted during the current year and since October 1, 1888.

	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Paternal branch	5	9	14	10	18	28
Maternal branch	14	11	25	24	29	53
Paternal and maternal branches	......	1	1	......	1	1
Collateral branches	12	9	21	33	24	57
No hereditary tendency	33	26	59	67	57	124
Unascertained	55	50	105	126	104	230
Total	119	106	225	260	233	493

TABLE NO. 9.

Showing civil condition of those admitted during the current year and since October 1, 1888.

CIVIL CONDITION.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Single	67	32	99	137	79	216
Married	35	46	81	86	97	183
Widowed	7	26	33	18	51	69
Divorced	1	......	1	4	.....	4
Unascertained	9	2	11	15	6	21
Total	119	106	225	260	233	493

TABLE NO. 10.

Showing degree of education of those admitted during the current year and since October 1, 1888.

DEGREE OF EDUCATION.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Collegiate	4	......	4	4	......	4
Academic	8	2	10	13	5	18
Common school	49	71	120	137	150	287
Read and write	11	1	12	15	5	20
Read only	1	3	4	6	10	16
No education	11	11	22	27	26	53
Unascertained	35	18	53	58	37	95
Total	119	106	225	260	233	493

Table No. 11.

Showing the duration of insanity previous to admission, and the period under treatment of those discharged recovered during the current year and since October 1, 1888.

DURATION PREVIOUS TO ADMISSION.	Year Ending September 30, 1890.		
	Men.	Women.	Total.
Under one month	3	....	3
Six to nine months	.....	1	1
One year to eighteen months	1	....	1
Two to three years	1	....	1
Five to ten years	1	....	1
Unascertained	3	3	6
Total	9	4	13
Period Under Treatment.			
One to three months	3	1	4
Three to six months	2	....	2
Six to nine months	1	1	2
Nine months to one year	2	1	3
One year to eighteen months	1	1	2
Total	9	4	13

DURATION PREVIOUS TO ADMISSION.	Since October 1, 1888.		
	Men.	Women.	Total.
Under one month	7	....	7
One to three months	2	1	3
Three to six months	2	1	3
Six to nine months	2	2	4
Nine months to one year	.....	1	1
One year to eighteen months	1	....	1
Eighteen months to two years	2	1	3
Two to three years	1	....	1
Five to ten years	1	....	1
Unascertained	5	4	9
Total	23	10	33

TABLE No. 11 — (*Concluded*).

PERIOD UNDER TREATMENT.	SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.
One to three months	4	3	7
Three to six months	5	....	5
Six to nine months	7	1	8
Nine months to one year	3	4	7
One year to eighteen months	4	2	6
Total	23	10	33

TABLE No. 12.

Showing the duration of insanity previous to admission, and the period under treatment of those discharged not recovered during the current year and since October 1, 1888.

DURATION PREVIOUS TO ADMISSION.	YEAR ENDING SEPTEMBER 30, 1890.		
	Men.	Women.	Total.
Under one month	4	....	4
One to three months	3	1	4
Three to six months	.....	1	1
Six to nine months	.....	1	1
Nine months to one year	.....	1	1
One year to eighteen months	3	2	5
Two to three years	6	1	7
Three to four years	.....	4	4
Four to five years	1	2	3
Five to ten years	2	6	8
Ten to twenty years	4	3	7
Twenty to thirty years	3	1	4
Unascertained	11	6	17
Total	37	29	66
PERIOD UNDER TREATMENT.			
One to three months	7	4	11
Three to six months	5	4	9
Six to nine months	2	2	4
Nine months to one year	1	2	3
One year to eighteen months	3	1	4
Eighteen months to two years	7	1	8
Two to three years	4	...	4
Three to four years	2	2	4
Four to five years	2	2	4
Five to ten years	1	7	8
Ten to twenty years	3	4	7
Total	37	29	66

TABLE NO. 12 — (*Concluded*).

DURATION PREVIOUS TO ADMISSION.	SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.
Under one month	7	1	8
One to three months	7	2	9
Three to six months	3	2	5
Six to nine months	2	2	4
Nine months to one year	2	1	3
One year to eighteen months	6	3	9
Eighteen months to two years	2	2	4
Two to three years	8	3	11
Three to four years	3	7	10
Four to five years	1	3	4
Five to ten years	7	11	18
Ten to twenty years	7	8	15
Twenty to thirty years	3	5	8
Over thirty years	1	....	1
Unascertained	18	6	24
Total	77	56	133
PERIOD UNDER TREATMENT.			
Under one month	2	1	3
One to three months	11	8	19
Three to six months	14	6	20
Six to nine months	6	5	11
Nine months to one year	1	7	8
One year to eighteen months	10	5	15
Eighteen months to two years	9	2	11
Two to three years	8	2	10
Three to four years	4	3	7
Four to five years	2	3	5
Five to ten years	4	8	12
Ten to twenty years	6	6	12
Total	77	56	133

TABLE NO. 13.

Showing the duration of insanity previous to admission, and the period under treatment of those who died during the current year, and since October 1, 1888.

DURATION PREVIOUS TO ADMISSION.	YEAR ENDING SEPTEMBER 30, 1890.		
	Men.	Women.	Total.
Under one month	1	....	1
One to three months	1	2	3
Six to nine months	1	1	2
Nine months to one year	.....	1	1
One year to eighteen months	1	1	2
Eighteen months to two years	.....	2	2
Two to three years	6	7	13
Three to four years	7	5	12
Four to six years	3	1	4
Six to ten years	5	9	14
Ten to twenty years	3	6	9
Twenty years and over	2	5	7
Unascertained	21	32	53
Total	51	72	123
PERIOD UNDER TREATMENT.			
Under one month	4	1	5
One to three months	3	5	8
Three to six months	7	6	13
Six to nine months	.....	2	2
Nine months to one year	4	2	6
One year to eighteen months	2	3	5
Eighteen months to two years	2	4	6
Two to three years	6	5	11
Three to four years	5	2	7
Four to six years	4	6	10
Six to ten years	6	14	20
Ten to twenty years	8	20	28
Twenty years and over	.....	2	2
Total	51	72	123

Table No. 13.— (*Concluded*).

DURATION PREVIOUS TO ADMISSION.	Since October 1, 1888.		
	Men.	Women.	Total.
Under one month	2	....	2
One to three months	3	3	6
Three to six months	2	1	3
Six to nine months	3	2	5
Nine months to one year	1	2	3
One year to eighteen months	8	3	11
Eighteen months to two years	3	2	5
Two to three years	14	11	25
Three to four years	16	8	24
Four to six years	5	3	8
Six to ten years	9	18	27
Ten to twenty years	11	12	23
Twenty years and over	7	6	13
Unascertained	33	48	81
Total	117	119	236
Period Under Treatment.			
Under one month	4	4	8
One to three months	14	9	23
Three to six months	14	8	22
Six to nine months	8	4	12
Nine months to one year	6	3	9
One year to eighteen months	8	9	17
Eighteen months to two years	5	7	12
Two to three years	7	8	15
Three to four years	11	4	15
Four to six years	4	7	11
Six to ten years	17	25	42
Ten to twenty years	19	29	48
Twenty years and over	....	2	2
Total	117	119	236

TABLE NO. 14.

Showing ages of those admitted during the current year and since October 1, 1888.

AGE.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
From ten to fifteen years	1	......	1	2	......	2
From fifteen to twenty years	7	2	9	14	3	17
From twenty to twenty-five years	7	5	12	16	14	30
From twenty-five to thirty years	13	7	20	25	20	45
From thirty to thirty-five years	15	7	22	38	19	57
From thirty-five to forty years	10	10	20	25	18	43
From forty to fifty years	25	33	58	50	68	118
From fifty to sixty years	16	15	31	34	36	70
From sixty to seventy years	14	17	31	24	31	55
From seventy to eighty years	7	7	14	24	20	44
From eighty to ninety years	4	3	7	7	4	11
From ninety to ninety-five years	......	......	......	1	......	1
Total	119	106	225	260	233	493

TABLE NO. 15.

Showing ages of those discharged recovered during the current year and since October 1, 1888.

AGE.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
From twenty to thirty years	2	2	4	8	2	10
From thirty to forty years	3	2	5	7	4	11
From forty to fifty years	3	......	3	5	3	8
From fifty to sixty years	1	......	1	3	1	4
Total	9	4	13	23	10	33

TABLE NO. 16.

Showing ages of those who died during the current year and since October 1, 1888.

AGE.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
From fifteen to twenty years	1	......	1	1	......	1
From twenty to twenty-five years	1	3	4	2	4	6
From twenty-five to thirty years	2	......	2	5	4	9
From thirty to thirty-five years	4	4	8	5	5	10
From thirty-five to forty years	4	2	6	16	8	24
From forty to fifty years	9	13	22	19	24	43
From fifty to sixty years	13	20	33	24	28	52
From sixty to seventy years	7	12	19	21	23	44
From seventy to eighty years	9	15	24	19	20	39
From eighty to ninety years	1	3	4	5	3	8
Total	51	72	123	117	119	236

Table No. 17.

Showing alleged duration of insanity previous to admission in those admitted during the year ending September 30, 1890.

DURATION OF INSANITY.	Men.	Women.	Total.
Under one month	10	1	11
One to three months	5	3	8
Three to six months	7	6	13
Six to nine months	4	4	8
Nine months to one year	4	4	8
One year to eighteen months	8	4	12
Eighteen months to two years	3	2	5
Two to three years	9	10	19
Three to four years	10	10	20
Four to five years	4	6	10
Five to ten years	8	10	18
Ten to fifteen years	3	8	11
Fifteen to twenty years	2	6	8
Twenty to thirty years	5	5	10
Thirty years and upwards	2	3	5
Not insane *	5	......	5
Unascertained	30	24	54
Total	119	106	225

* Includes cases of alcoholism, morphia habit, etc.

Table No. 18.

Showing period of residence in hospital of those remaining under treatment September 30, 1890.

PERIOD OF RESIDENCE.	Men.	Women.	Total.
Under one month	8	6	14
One to three months	11	8	19
Three to six months	17	14	31
Six to nine months	26	36	62
Nine months to one year	31	29	60
One year to eighteen months	56	46	102
Eighteen months to two years	26	44	70
Two to three years	102	97	199
Three to four years	54	55	109
Four to five years	39	39	78
Five to ten years	194	238	432
Ten to fifteen years	221	254	475
Fifteen to twenty years	159	166	325
Twenty to thirty years	39	33	72
Total	983	1,065	2,048

TABLE No. 19.

Showing the occupation of those admitted during the current year and since October 1, 1888.

OCCUPATION.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Baker	1	......	1	1	......	1
Barbers	2	......	2	3	......	3
Butchers	1	......	1	3	......	3
Cheesemaker	......	1	1	......	1	1
Clergymen	2	......	2	2	......	2
Clerks and book-keepers	3	......	3	9	......	9
Coachmen	......	......	......	3	......	3
Compositors	1	......	1	2	......	2
Editors	1	......	1	2	......	2
Engineer	......	......	......	1	......	1
Farmworkers	32	......	32	65	......	65
Harnessmaker	......	......	......	1	......	1
Hatter	......	......	......	1	......	1
Hotelkeeper	1	......	1	2	......	2
Houseworkers	......	94	94	......	196	196
Laborers	29	......	29	65	......	65
Laundresses	......	1	1	......	2	2
Lawyer	......	......	......	1	......	1
Masons	......	......	......	3	......	3
Merchants and salesmen	3	......	3	9	......	9
Metalworkers	5	......	5	9	......	9
Milliner	......	......	......	......	1	1
Millers	2	......	2	3	......	3
Miner	......	......	......	1	......	1

Night watch	......	......	......	1	......	1
No occupation	11	4	15	21	14	35
Nurse	......	1	1	......	1	1
Painters	3	......	3	6	......	6
Physician	1	......	1	1	......	1
Railroad operative	1	......	1	1	......	1
Rubber-worker	......	......	......	1	......	1
Seamen	1	......	1	4	......	4
Seamstress	......	2	2	......	3	3
Shoemakers	4	......	4	6	......	6
Speculator	......	......	......	1	......	1
Stonecutters	......	......	......	2	......	2
Students	1	......	1	2	......	2
Tailors	2	......	2	5	......	5
Tanner	......	......	......	1	......	1
Teachers	2	1	3	2	4	6
Telegrapher	......	......	......	1	......	1
Tinsmith	1	......	1	1	......	1
Unascertained	5	1	6	9	8	17
Weavers	......	1	1	......	3	3
Wood-worker	3	......	3	8	......	8
Wool-carder	1	......	1	1	......	1
Total	119	106	225	260	233	493

TABLE No. 20.

Showing the nativity of patients admitted during the current year and since October 1, 1888.

NATIVITY.	DURING THE YEAR.			SINCE OCTOBER 1, 1888.		
	Men.	Women.	Total.	Men.	Women.	Total.
Connecticut	1	......	1	1	1	2
Massachusetts	2	......	2	3	1	4
Maine	......	1	1	......	1	1
Maryland	1	......	1	1	......	1
New Jersey	......	1	1	2	1	3
New York	56	61	117	136	131	267
Pennsylvania	3	1	4	4	1	5
Vermont	......	1	1	2	1	3
Virginia	......	......	......	1	1	2
Wisconsin	1	......	1	1	......	1
Canada	.....	2	2	2	2	4
England	3	1	4	10	5	15
France	2	......	2	2	......	2
Germany	5	8	13	12	18	30
Ireland	14	24	38	32	56	88
Italy	1	......	1	2	......	2
Poland	1	......	1	2	......	2
Scotland	1	......	1	4	......	4
Sweden	......	......	......	1	......	1
Unascertained	28	6	34	42	14	56
Total	119	106	225	260	233	493

TABLE No. 21.

Showing the residence by counties of those admitted during the year.

COUNTIES.	Men.	Women.	Total.
Albany	5	1	6
Allegany	1	......	1
Cayuga	1	1	2
Chemung	1	2	3
Columbia	1	2	3
Erie	2	2	4
Essex	2	3	5
Franklin	.....	1	1
Fulton	1	......	1
Genesee	4	8	12
Jefferson	4	1	5
Lewis	1	2	3
Livingston	1	......	1
Monroe	2	1	3
Montgomery	......	2	2
Niagara	4	3	7
Onondaga	5	8	13
Ontario	20	17	37
Orleans	......	3	3
Oswego	......	1	1
Otsego	2	1	3
Queens	4	8	12
St. Lawrence	2	......	2
Schenectady	2	......	2
Schuyler	10	3	13
Seneca	13	6	19
Steuben	6	7	13
Tioga	1	......	1
Tompkins	6	13	19
Wayne	1	......	1
Westchester	8	7	15
Wyoming	1	.....	1
Yates	1	3	4
State patients	5	......	5
Soldiers' Home	2	......	2
Total	119	106	225

TABLE No. 22.

Showing the residence by counties and classification of patients remaining under treatment September 30, 1890.

Counties.	Public.
Albany	156
Allegany	29
Broome	1
Cattaraugus	1
Cayuga	71
Chemung	87
Clinton	3
Columbia	34
Cortland	1
Delaware	24
Dutchess	91
Erie	46
Essex	14
Franklin	35
Fulton	25
Genesee	27
Greene	16
Hamilton	2
Herkimer	9
Jefferson	36
Lewis	10
Livingston	7
Madison	6
Monroe	17
Montgomery	35
Niagara	101
Oneida	3
Onondaga	60
Ontario	110
Orange	14
Orleans	33
Oswego	10
Otsego	19
Putnam	15
Queens	70
Rensselaer	103
Richmond	26
Rockland	9

Counties.	Public.
St. Lawrence	41
Saratoga	22
Schenectady	38
Schoharie	25
Schuyler	50
Seneca	72
Steuben	50
Suffolk	4
Tioga	1
Tompkins	65
Ulster	27
Warren	3
Washington	26
Wayne	12
Westchester	167
Wyoming	7
Yates	46
State patients	36
Total	2,048

Report of the Steward.

To the Medical Superintendent:

The following report of the farm and garden products, stock on hand, and articles manufactured, and the classification and summary of expenditures for maintenance, for the year ending September 30, 1890, is respectfully submitted:

FARM PRODUCTS.

Beef, dressed, pounds	4,714
Buckwheat, estimated, bushels	100
Corn, ears, estimated, bushels	1,500
Corn, sweet, estimated, bushels	658
Corn, stalks, estimated, bundles	7,000
Corn, fodder, estimated, tons	85
Chickens, dressed, pounds	977
Eggs, dozen	875
Hides, pounds	652
Hay, tons	600
Milk, gallons	75,377
Mangel-wurtzels, estimated, bushels	5,000
Oats, estimated, bushels	2,000
Potatoes, bushels	6,000
Pork, dressed, pounds	39,124
Straw, estimated, tons	150
Turnips, estimated, bushels	500
Turkeys, dressed, pounds	238
Wheat, estimated, bushels	2,500

GARDEN PRODUCTS.

Asparagus, bunches	9,535
Beets, estimated, bushels	1,800
Beans, string, bushels	350
Beans, Lima, bushels	75
Cabbage, heads	53,689
Carrots, estimated, bushels	5,000
Celery, heads	10,231

Corn, sweet, bushels	257
Cucumbers, estimated, bushels	750
Lettuce, bushels	1,454
Mangel-wurtzels, estimated, bushels	3,500
Onions, bushels	324
Onions, bunches	4,701
Parsnips, estimated, bushels	300
Peas, bushels	366
Peppers, bushels	15
Potatoes, bushels	315
Radishes, bunches	3,529
Rhubarb, bunches	37,545
Rutabaga, estimated, bushels	600
Salsify, estimated, bushels	15
Savory, bunches	371
Spinach, bushels	298
Squash, summer, estimated, bushels	550
Squash, Hubbard, bushels	75
Thyme, bunches	352
Tomatoes, estimated, bushels	2,000
Turnips, estimated, bushels	2,000

STOCK ON HAND, SEPTEMBER 30, 1890.

Horses, good	28
Mules	3
Colts, 2 years old	3
Colts, 1 year old	3
Colts, sucklings	6
Cows	122
Heifers	37
Bulls	4
Oxen	4
Hogs, fat	215
Breeding sows	95
Pigs	245
Turkeys	85
Chickens	230
Geese	26
Ducks	39

EXPENDITURES FOR THE YEAR ENDING SEPTEMBER 30, 1890, AND WEEKLY COST OF SUPPORT.

MONTHS.	Mainten-ance.	Fuel and lights.	Farm wages and expenses.	House wages.	Furni-ture and repairs.	Miscella-neous.	Medi-cines, etc.	Improve-ments.	Clothing, etc.	Total.
1889.										
October	$8,783 41	$2,705 10	$721 84	$6,815 60	$4,731 60	$893 67	$212 59	$333 28	$3,415 67	$28,612 76
November	10,560 51	3,577 61	464 80	6,816 45	2,794 66	1,103 42	614 29	178 13	1,125 57	27,235 44
December	7,111 81	3,275 41	429 27	6,863 31	1,799 24	864 02	214 19	165 60	2,712 91	23,435 76
1890.										
January	8,782 85	2,233 05	609 63	6,876 18	1,305 22	685 70	192 84	347 84	1,007 08	22,040 39
February	7,337 62	1,223 16	472 80	6,854 73	1,534 85	960 77	132 95	92 70	2,405 34	21,020 94
March	7,334 36	1,076 48	1,254 60	6,909 68	2,413 82	1,548 45	1,052 64	....	2,016 81	23,606 84
April	5,245 72	1,300 17	761 42	7,007 05	1,839 97	562 53	129 48	49 80	1,530 16	18,426 30
May	7,980 72	161 59	1,553 70	7,155 10	2,034 82	693 59	200 45	....	1,191 56	20,971 53
June	6,124 06	333 35	876 89	7,228 44	2,331 74	887 66	318 09	127 88	862 76	19,090 87
July	9,878 36	644 80	696 61	7,093 64	1,887 40	892 97	92 94	99 25	637 47	21,923 44
August	8,054 02	1,462 44	1,064 52	7,227 83	3,174 06	877 82	165 05	....	685 01	22,710 75
September	11,020 38	2,391 29	828 23	7,310 21	1,035 56	970 31	93 39	....	3,136 67	26,786 04
Total	$98,213 82	$20,384 45	$9,740 33	$84,158 22	$26,882 94	$10,940 91	$3,418 90	$1,394 48	$20,727 01	$275,861 06

The daily average number of patients was 2,052.

Total cost per week per patient was $2.391; clothing, etc., .194; aggregate cost per week was $2.585.

ARTICLES MADE IN MATRON'S DEPARTMENT.

Aprons	3,684
Aprons, kitchen	184
Balmorals	142
Bed spreads	461
Bed sacks	317
Bed protectors	154
Blankets, hemmed	1,817
Caps, attendants'	301
Chemise	1,279
Collars	3,491
Curtains	513
Clothing bags	36
Dresses	3,918
Dresses, night	36
Dresses, quilted	11
Drawers, pairs	1,339
Hats, trimmed	339
Holders	87
Mattress ticks	212
Napkins	180
Pillows	144
Pillow cases	1,588
Pillow ticks	99
Sheets	2,718
Shirts	2,669
Skirts	1,231
Shrouds	98
Table-cloths	274
Table-spreads	59
Towels	1,733
Wrappers	795

GARMENTS MADE IN TAILORING DEPARTMENT.

Overcoats	61
Coats	1,710
Pants	1,496
Vests	1,353
Union suits	281
Overalls	137
Overshirts	15
Drawers	8

ARTICLES MADE IN SHOE SHOP.

Hair mattresses	203
Hair pillows	180
Hair cushions	7
Slippers, pairs	12
Shoes, pairs	6
Harness straps	12
Martingales, pairs	8
Double lines, pairs	5
Single lines, pairs	1
Horse collars, faced	10
Clothes bags	15
Breast straps, pairs	10
Halters	6
Bridle	1

All repairing of harness, boots, shoes and slippers.

M. J. GILBERT,
Steward.

APPENDIX.

Laws and Regulations Relating to the Insane.

CHANGE OF NAME.

(*Chapter* 132, *Laws of* 1890.)

§ 2. The Willard Asylum for Insane, as the same was authorized to be established by chapter 342, Laws of 1865, and the acts supplemental thereto, shall hereafter be known and designated as the "Willard State Hospital."

DIVISION OF STATE INTO ASYLUM DISTRICTS AND THE ADMISSION OF PATIENTS THEREFROM.

In accordance with the provisions of section 1 of chapter 126 of the Laws of 1890, the board for the establishment of State insane asylum districts and other purposes, has divided the State into State insane asylum districts, assigning to the Willard State Hospital the counties of Allegany, Cayuga, Chemung, Livingston, Ontario, Schuyler, Seneca, Steuben, Tompkins, Wayne and Yates.

(*Chapter* 126, *Laws of* 1890.)

§ 5. Each of the State asylums for the insane shall receive patients, whether in an acute or chronic condition of insanity, from the district in which the asylum is situated.

§ 9. In case any insane person, his relatives, guardians or friends may desire that he become an inmate of any State asylum situated beyond the limits of the district where he resides, and there be sufficient accommodations there to receive him, he may be received there in the discretion of the chairman of the State Commission in Lunacy, and the superintendent of such asylum. Any expenses of removal, in such case, must be borne by said insane person's guardians, relatives or friends, as the case may be.

TRANSFERS OF PUBLIC INSANE PATIENTS FROM THEIR HOMES OR FROM POORHOUSES TO STATE HOSPITALS BY SUPERINTENDENTS OF THE POOR.

The statute (section 6 of chapter 126 of the Laws of 1890) having made it the duty of the President of the State Commission in Lunacy to prescribe regulations governing the transfer of public insane patients from their homes or from poor-houses to State hospitals by superintendents of the poor, and concerning the clothing of said patients, it has been ordered:

I. That all county superintendents of the poor or town, county or city authorities, before sending a patient to any State hospital see that said patient is in a state of bodily cleanliness and provided with the following clothing, to wit:

(*a.*) One full suit of underclothing.

(*b.*) One full suit of outerclothing, including headwear, boots or shoes.

Between the months of November and April, both inclusive, there shall be provided, in addition to the foregoing, a suitable overcoat for the men patients and a suitable shawl or cloak for the women patients; also gloves or mittens. Considering the great danger, always present, of the introduction of contagious or infectious diseases into institutions where large numbers of people are congregated, and to avoid, so far as possible, the introduction of such diseases by means of wearing apparel, the clothing above provided for must in all cases be new.

II. In traveling by rail patients must not be compelled to ride in smoking or baggage cars, except in the case of men patients who may be so violent, profane or obscene as to render their presence in ordinary passenger coaches offensive. If any portion of the route is necessary to be traversed by team, a covered conveyance should, unless impossible, be provided. The shortest practicable route should be selected; the hour of departure should be timed, so far as possible, so as to avoid the necessity of stopping over night on the journey and so as not to reach the hospital at an unseasonable hour. Whenever practicable, a notice in advance, by writing or telegraph, should be sent to the medical superintendent of the hospital of the coming of the patient. In cases of violent patients a sufficient number of attendants should be provided to control their actions without resorting to the use of mechanical restraints, such as straps, ropes, chains, hand-cuffs, etc.; quieting medicines should not be given such patients, except upon the prescription of a physician. If it becomes necessary to remain over night or for a number of hours at a station on the route, patients are not to be taken to jail, police station or lock-up. Food in proper quantity and quality, and at intervals not exceeding five hours, should be provided for patients, but no alcoholic beverages must be given unless upon prescription of a physician. Opportunity must be afforded for the attention to the calls of nature, and the rules of decency must be observed. In case of the employment of extra attendants in conveying violent patients, care must be taken that they are of adult age and of good moral character. The provisions of the statute which require that a woman attendant shall accompany women patients when taken to State hospitals must be strictly complied with.

III. Any violation of the requirements of this order shall be promptly reported, so far as known to him, by the medical superintendent of the hospital to the State Commission in Lunacy.

Commitment of Patients.

(*Chapter* 446, *Laws of* 1874.)

Section 1. No person shall be committed to or confined as a patient in any asylum, public or private, or in any institution, home or retreat for the care and treatment of the insane, except upon the certificate of two physicians, under oath, setting forth the insanity of such person. But no person shall be held in confinement in any such asylum for more than five days, unless within that time such certificate be approved by a judge or justice of a court of record of the county or district in which the alleged lunatic resides, and said judge or justice may institute inquiry and take proofs as to any alleged lunacy before approving or disapproving of such certificate, and said judge or justice may, in his discretion, call a jury in each case to determine the question of lunacy.

§ 2. It shall not be lawful for any physician to certify to the insanity of any person for the purpose of securing his commitment to an asylum, unless said physician be of reputable character, a graduate of some incorporated medical college, a permanent resident of the State, and shall have been in the actual practice of his profession for at least three years. And such qualifications shall be certified to by a judge of any court of record. No certificate of insanity shall be made except after a personal examination of the party alleged to be insane, and according to forms prescribed by the State Commission in Lunacy (these blank forms may be obtained free upon application to the State Commission in Lunacy, county clerks, superintendents of the poor and the superintendent of asylums or hospitals for the insane), and every such certificate shall bear date of not more than ten days prior to such commitment.

§ 3. It shall not be lawful for any physician to certify to the insanity of any person for the purpose of committing him to an asylum of which the said physician is either the superintendent, proprietor, an officer, or a regular professional attendant therein.

(*Chapter* 283, *Laws of* 1889, *as amended by chapter* 273, *Laws of* 1890.)

§ 7. * * * * One year after the date of the passage of this act (May 14, 1889), it shall not be lawful for any medical examiner in lunacy to make a certificate of insanity for the purpose of committing any person to custody unless a certified copy of his certificate has been so filed and its receipt in the office of the commission (State Commission in Lunacy), as above provided, has been acknowledged.

In addition to the medical certificate of two physicians sworn to and approved by a judge in the county in which the patient resides, there must be presented at the time of admission of a patient either an order from the superintendent of the poor, or the county judge, or a bond (in case of private patient) guaranteeing the amount charged for care and treatment.

ADMISSION OF PRIVATE PATIENTS TO THE STATE HOSPITALS FOR THE INSANE.

The following is a copy of the order issued by the State Commission in Lunacy in regard to the admission of private patients:

On and after October 1, 1890, no private patient in any State hospital will be permitted to occupy more than one room for his or her personal use or behoof, or to command the exclusive services of an attendant; and, thereafter there shall be no distinction allowed between private and public patients in respect to the scale or care and accommodations furnished them.

On and after October 1, 1890, no private patient will be admitted to any State hospital, except in strict accordance with the statute, as follows: "Whenever there are vacancies in the asylum" (State hospital) there may be received "such recent cases as may seek admission under peculiarly afflictive circumstances, or which in his (the superintendent's) opinion promise speedy recovery," and upon an order granted by the State Commission in Lunacy upon an application in writing, addressed to the commission, of a near relative, guardian or committee of the patient.

TRANSFER OF PATIENTS FROM ONE INSTITUTION TO ANOTHER.

At a regular quarterly meeting of the State Commission in Lunacy, held at the Capitol, in the city of Albany, July 2, 1890, the following order was made:

I. No inmate shall be transferred from one institution for the care and treatment of the insane to another except upon the following terms and conditions:

(*a*) An application in writing setting forth the reasons for such transfer shall be made to the commission by the medical superintendent or officer in charge of the institution from which the transfer is sought to be made.

(*b*) An order of transfer in writing, attested by its secretary, must be obtained from the commission.

(*c*) The order of transfer must be filed in the institution from which the transfer is made, and a certified copy of the same, together with a certified copy of the medical certificate of lunacy, must be filed in the institution to which the transfer is made.

(*d*) The medical superintendent of the institution to which the transfer is made shall, within ten days after the receipt of the patient, notify the commission of the fact and the date thereof, but a copy of the medical certificate of lunacy need not accompany the notice.

II. This order shall not apply to either of the following cases:

(*a*) Inmates of the State Asylum for Insane Criminals, or patients committed upon "criminal orders."

(*b*) Patients ordered transferred by the commission upon its own motion.

Discharge of Patients.

Patients are discharged by the board of trustees at the regular meetings of the board held on the first Tuesdays of January, April, July and September, and at the annual meeting on the second Tuesday of December.

During the intervals between the meetings patients are discharged by a committee of the board of trustees, appointed in pursuance to chapter 190, section 2, Laws of 1881.

Patients are not discharged by the superintendent. The power to discharge patients is vested solely in the board of trustees, in pursuance to chapter 178, Laws of 1885, as follows:

Section 1. The trustees of the Willard State Hospital, upon the medical superintendent's certificate of complete recovery, may discharge any patient except one under a criminal charge, or liable to be remanded to prison; and they may discharge any patient except one under a criminal charge aforesaid, upon the superintendent's certificate that such patient is harmless, and will probably continue so, and is not likely to be improved by further treatment in the asylum, to the custody of his or her friends, who will present satisfactory evidence that they are able and willing to maintain and care for the same properly. They may also discharge any such patient as aforesaid whose relative or friends will undertake with good and approved sureties for his or her peaceable behavior, safe custody and comfortable maintenance, without further public charge; and the bond of such sureties shall be approved by the county judge of the county from which such patient was sent, and shall be filed in the county clerk's office of said county. Upon the presentation of a certified copy thereof, the trustees may discharge such patient; and in all such cases the trustees shall forthwith notify the superintendent of the poor of the proper county, of such discharge and undertaking.

Copies of these various blanks will be furnished upon application to the superintendent of the hospital.

CHARGE TO COUNTIES OF THE STATE FOR THE CARE AND MAINTENANCE OF INSANE PATIENTS.

Bills are made out and transmitted quarterly in advance to county treasurers on the first days of January, April, July and October, by the treasurer of the hospital, in accordance with the order of the State Commission in Lunacy, which is as follows:

I. There shall be charged for each patient in continuous custody under the commitment, or order, by which he is held, as follows:

(*a*.) For the first three years or less, the sum of four dollars and twenty-five cents per week.

(*b*.) For any period of time exceeding three years, the sum of two dollars and fifty cents per week.

II. The charge hereby established shall include food, clothing, breakage and all other charges of any name or nature, and no greater charge shall be made under any circumstances whatsoever.

III. This order shall be in full force and effect on and after October 1, 1890, and shall apply to all patients in custody on that date.

VISITATION OF PATIENTS AND OF THE HOSPITAL.

I. For the purpose of enabling the public to obtain a correct knowledge of the arrangement and management of a hospital for the insane, and of doing so without interference with the regular duties of the officers and the transaction of necessary business, visitors, in limited numbers, will be admitted to such portions of the house as may be occupied by quiet patients, between the hours of 2 and 5 in the afternoon of every day of the week, excepting Sunday, Saturday and holidays.

II. Exceptions to this rule may be made in favor of public officers, persons connected with public institutions, and relatives of patients,

III. Visitors will not be permitted to enter the wards, pass to the rear of the building, or approach the windows from the outside for conversation, unless accompanied by a resident officer.

VI. The person appointed to conduct visitors through the wards will not be permitted to converse about patients by name, or to point them out, and visitors are requested to observe an appropriate discretion in this respect.

V. Persons wishing to see patients, or learn their condition, should make inquiry of the superintendent or one of the assistant physicians at the medical office. As a rule, information concerning patients will be furnished only to relatives and public officers.

Service of Legal Papers Upon Insane Patients.

By direction of the State Commission in Lunacy, the superintendent, or officer in charge of an institution for the care and treatment of the insane, cannot permit the service of any legal process whatever upon any insane patient except upon the order of a judge of a court of record, which shows that the judge had notice of the fact that the person sought to be served was at the date of the order an inmate of such institution.

It is also directed that no insane person be permitted to sign any bill, check, draft or other evidence of indebtedness, or to execute any contract, deed, mortgage or other legal conveyance, except upon the order of a judge of a court of record, which shows that the judge had notice of the fact that the person whose signature is sought to be obtained was at the date of the order an inmate of an institution for the care and treatment of the insane.

Correspondence, Etc.

Applications for the admission of patients should, when practicable, be made in advance of bringing them to the hospital, and each patient should be accompanied by some person competent to furnish a history of the case.

Letters are not written to friends of patients at stated intervals, but only in reply to letters of inquiry and in case of sickness or death; it is desirable to have but one correspondent for each patient. The correspondent will be informed by telegraph in case of the serious sickness or in event of the death of a patient, where it is practicable, to do so. Remains will be sent by express when a guarantee is received from the express agent that the charges for transportation will be paid; otherwise they will be appropriately buried in the asylum cemetery, and the grave permanently marked numbered and recorded.

All correspondence concerning patients or the business of the hospital should be addressed to the superintendent,

Dr. CHARLES W. PILGRIM,
Willard, Seneca Lake, N. Y.

SEVENTH ANNUAL REPORT

OF THE

NEW YORK

STATE DAIRY COMMISSIONER,

FOR THE YEAR 1890.

TRANSMITTED TO THE LEGISLATURE, JANUARY 14, 1891.

ALBANY:
JAMES B. LYON, STATE PRINTER.
1891.

STATE OF NEW YORK.

No. 17.

IN ASSEMBLY,

JANUARY 14, 1891.

SEVENTH ANNUAL REPORT

OF THE

NEW YORK STATE DAIRY COMMISSIONER.

To the Honorable the Legislature of the State of New York:

In accordance with the provisions of the statutes, applicable thereto, I hereby submit the report of the work performed by the New York State Dairy Commission for the year ended September 30, 1890.

JOSIAH K. BROWN,

New York State Dairy Commissioner.

REPORT.

I shall, in this report to your honorable body, in addition to setting forth the work done, speak, to some extent, of new and important points which have been of more advantage than others and to which your attention should be called on account of their importance to the public.

Manufacturers of and dealers in oleomargarine, who have heretofore shown great zeal and enterprise in pushing the sale of their goods in our markets, have ceased to be a factor in the business enterprise of the State. Just what they might do if the agents of this department were not keenly alive to the possibilities is not known; but the fact that their agents endeavor to quietly and clandestinely place their goods in the boarding-houses and restaurants is indicative of what might follow if the present vigilance of the department was relaxed. Experience with these people has taught us that it is better to watch for the goods as they are being brought into the State, and follow them to their destination, than to endeavor to find them in any other manner. So closely have the agents of the department watched all attempts to introduce these goods, in this manner, that the cases of actual violation by using them on the tables in the boarding-houses and restaurants have become very few. We have discovered and successfully prosecuted thirteen persons for violations of this kind; most of whom were near the border of the State. Owing to the fact that this trade has been driven out, the confidence in our State goods has greatly increased in European markets, which has created a greater demand for them. The benefit from this condition of things to the people of this State can not be estimated.

For a time it was the custom of the manufacturers or dealers in such goods to endeavor to keep up their waning trade by indemnifying those who handled them, in this State, from any loss that might be sustained by reason of prosecution by the State authorities, but this became so hazardous and expensive that it has been entirely abandoned.

The reports of the assistant commissioners of the different divisions of the State, which are appended hereto, will show the amount and disposition of the penalties imposed, and give, in detail, the work performed in each division.

The work during the year, under chapter 515 of the Laws of 1889, relative to vinegar, has, of necessity, been limited. We have, however, prosecuted twenty-five different persons for violations of this law, nineteen of whom were convicted and fined, and seven are awaiting trial. The whole amount of fines imposed was $905. It is believed by those in a position to know that even this small beginning is having a salutary effect upon the trade in vinegar.

The Legislature, in providing for this work, appropriated $5,000, which we have endeavored to so expend as to produce the best possible results, and to so regulate its expenditure that the money would cover the period for which it was appropriated.

The force of milk experts was withdrawn from the city of New York for about two months in the early part of the season; on their return to the city, the examination of the condition of the milk showed that the adulteration was very great, and a large number of prosecutions were promptly brought, which had the desired effect of reducing the percentage of adulteration. The same condition prevailed in Brooklyn, though not to quite the same extent. Upon revisiting the smaller cities and villages we found that adulterations were again being practiced, and, consequently, the work was extended so as to cover these places.

This supervision of the milk supply was also extended to the summer resorts. Considerable attention has been given to the condition of stables, and especially to those in the suburbs of large cities, and the food given to stable-fed cows.

The stables, in most cases, have been found in good condition, showing a marked improvement. Considerable attention has been given during the year to herds, to learn whether or not they were diseased with pleuro-pneumonia, tuberculosis or other diseases that are liable to cause unwholesome milk.

The condition of the cows has been unusually good during the year so far as we have been able to discover.

The following cases have come to our attention:

In Attica, N. Y., we found a man who was selling milk which was, in some instances, fed to infants. This milk when analyzed showed almost no fat at all. Another sample was procured directly from the cow and analyzed with the same result; the conditions present gave unmistakable evidence that the cow was suffering from tuberculosis; she was afterwards killed.

A similar case was found in Buffalo, where a man nearly seventy years of age was milking a cow suffering from bovine tuberculosis and selling the milk for consumption; he continued to do this even after the cow was so weak that she could not stand alone. This man was prosecuted and fined.

It was also ascertained that milk from cows suffering from hoof disease was being sold in Buffalo. Our efforts were successful in stopping the shipment and sale of this milk.

We received notice from parties in Schoharie county that there was a herd of cattle suffering with some disease of the extremities, and that the milk was being sold from said cattle. But, upon investigation, it was found that they were suffering from black leg, which occurs only in young cattle that give no milk.

Milk arriving over the different railroads and by steamboat lines at New York city was inspected during the month of September. Only a small percentage of this milk was found to be adulterated. Of the 16,371 cans of milk inspected and delivered to the dealers of New York, only eighty-eight were found by test to be of poor quality, being only one-half of one per cent of the whole amount delivered. This shows about the same percentage of adulteration as the country milk which has been received in the city during the year, which is a much smaller percentage of adulteration than that shown in the milk handled by dealers in the city. Milk shipped to New York from Connecticut and New Jersey has shown a larger percentage of adulteration than the New York State product.

This has been removed to some extent by our prosecutions of those handling this milk. This had a tendency to destroy the New York market for the people of those States, unless they sent a better product, which they have been doing since. The quality of the milk sold in this market is now better than ever before, notwithstanding the fact that the scarcity of ice, which has been thought to be necessary to keep the milk from souring, has had a tendency to tempt the producers to adulterate by using preservatives.

Some dealers in milk have been induced to use a compound known as preservaline or rex magnus, thinking it would prevent their milk from souring or keep it sweet until it could be disposed of. The investigation of this question by the department chemist and others whose scientific knowledge on this subject was competent, shows that these compounds are unhealthful. Therefore the department put forth its best effort to prevent this compound from being used in milk; it is believed that its use has been abandoned. The injuries arising from the use of "preservaline" are greatly increased from the fact that the milk passes through the hands of producer, creamery man, wholesale and retail dealer who, each in their turn, are quite apt to add the amount indicated by the directions; thus when the milk reaches the consumer it may have four times as much in as that intended by the manufacturer.

All persons detected in adulterating milk in this manner have been promptly prosecuted.

Three creameries were discovered using preservaline or rex magnus to preserve the milk; they were complained of; on being summoned before the magistrate, pleaded guilty.

In Searsville, N. Y., a manufactory exists, the product of which is in proportion as follows: Thirteen quarts of evaporated skim milk mixed with twenty-seven quarts of cream; this product was sold in New York city.

The milk in the western part of the State is of better quality than heretofore. We have found fewer cases during the present year which demanded prosecutions than any year since the formation of this department. The driving out of adulteration has made more room for the genuine dairy product. This is evidenced by the fact that previous to our prosecutions the milk that supplied the city of Rochester was procured within a radius of eighteen miles; now some of it comes from a distance of nearly 100 miles from the city. This, of course, adds greatly to the business of the milk producer. One of the difficulties met with is that when milk is taken from the wagons of unscrupulous milkmen and found to have been adulterated by skimming, the claim is frequently set up that the can from which it was taken contained only skimmed milk which they had a right to sell under the law.

In the prosecution of our milk cases, we have met with difficulties arising from the different methods of analysis now in vogue. By chapter 202, Laws of 1884, your honorable body provided that no milk should be sold upon the market containing more than eighty-eight per cent of water, or less than twelve per cent of solids, or less than three per cent of fats. In determining whether milk thus sold was adulterated or not, under this law, we resorted in all cases to an analysis of the suspected sample. The method in vogue when this law took effect was known in this country as the Wanklyn-Waller method. In the course of the prosecutions within the last few years, we have been confronted with a new method for analyzing milk, known as the Adams' method, which takes more fat from the milk than the method we were using. It was introduced and adopted as the best method by the Society of Public Analysts of England, and by many prominent chemists in this country. This condition of things confronted us in the courts. The law under which we are acting does not specify any particular method, and, indeed, we have no means of knowing whether or not your honorable body took cognizance of this question in enacting the statute. The courts have accepted evidence as to the constituents of milk, as determined by this new method ; this forced us to use it in analyzing samples of suspected milk.

This practically lowers the standard of fat, and, as the question has been considerably agitated, and bills have been introduced in the Legislature to raise the standard to cover the difference in the amount obtained by these different methods, and, on different occasions, committees of your honorable body have looked to this department to furnish the necessary evidence as to the difference in amount of fat so obtained, it was deemed necessary to analyze as many samples of milk of known purity as could be done, without interfering with the current work, for the purpose of ascertaining the facts in the matter. The reliability itself of the Adams' method has been questioned by as eminent chemists as those who advocated it, which adds not a little to our embarrassments. In view of these facts, the department chemist, Dr. R. D. Clark, was instructed to institute and take charge of an investigation of these questions involving a series of analyses by both methods of samples of milk of known purity, and also of abnormal milk. The report of the work thus performed by him and others will be found in his report attached hereto.

Some of the notable features of this report are:

First. A special report by Dr. Elwyn Waller, of the School of Mines, New York, of work performed by him in investigating the reliability of the Adams' method.

Second. A special report of Prof. Caldwell, of Cornell University, Ithaca, N. Y., describing his method of analyzing milk by the use of asbestos instead of paper, as in the Adams' method.

Also, another describing the use of the same material as used by Prof. Lattimore.

Also, the results of work done by this method by the department chemist.

Also, the results of analyses of milk by a method differing from the other two compared with the results by the Adams' method, by Dr. Deecke, of the State Hospital, Utica, N, Y.

Also, the results of the analyses of a large number of samples of full-cream cheese, which samples were made under the direct supervision of cheese instructors of this department, have been tabulated and included in his report by Dr. Clark, bearing upon the question of a standard for full-cream cheese, and for the information of the cheese instructors.

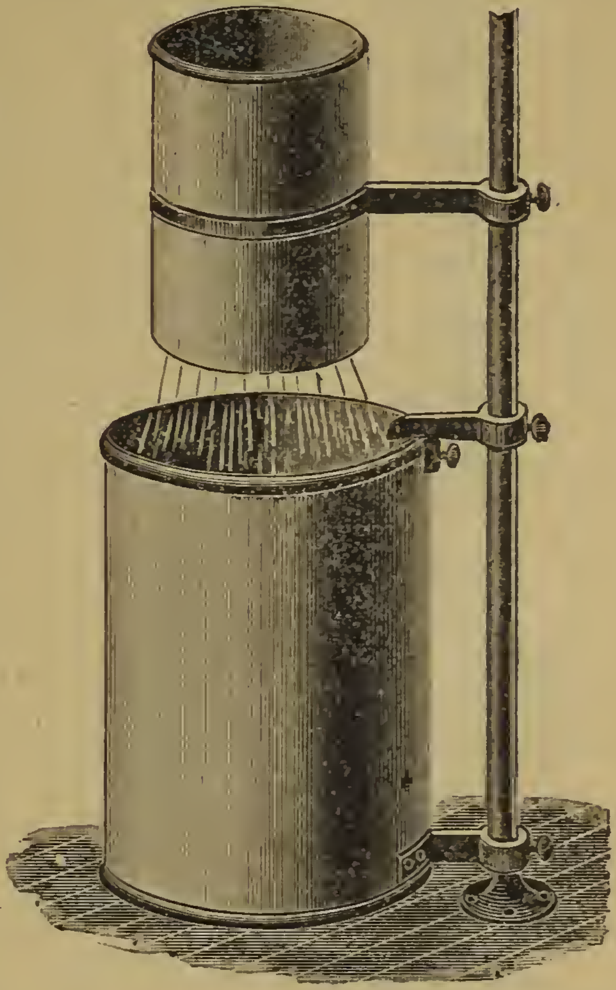
When the summer came on, the farmers of New York, very generally, found themselves without ice. During the spring months they could get along very well in the handling of the milk, both for cheese and butter-making, but when the hot weather set in, it was found to be almost impossible to keep milk from souring before the cream could rise or before it could be manufactured into cheese. The cheese experts, in this dilemma, were directed by me to instruct the people relative to the importance of aerating milk; they also in all their lectures, and at every opportunity, urged the value of aeration and gave full explanation as to how it should be done.

It has heretofore been customary to reduce the temperature of milk, after milking, for the purpose of keeping it from souring until it could be used or manufactured. This was but a means or attempt to delay action that would naturally result from the conditions present in milk when drawn from the cow. The desirable thing is to remove as quickly and completely as possible the animal odors and gases. This is accomplished by thorough aeration. The usual reduction of temperature does not injure milk, but on the other hand benefits it, provided, that it is first properly aerated. This system has been adopted by many dairymen and has saved a large amount of milk from going "off flavor," or becoming sour, or retaining taint, or the beginning of putrefaction. All of these conditions are liable to occur, if milk is left with the animal odors in it and the other gases which it is very likely to contain. No one has as yet entirely mastered the science of the gases in milk or how it is that sudden changes will take place in its composition when all the conditions are favorable to such changes.

This department has endeavored to impress dairymen with the idea that milk should be thoroughly aerated before being covered in tight vessels, for the reason that if it is not done the conditions may be favorable for the production of incipient putrefaction and the possible formation of tyrotoxicon or "poisonous principle;" this is now pretty generally understood and dairymen are finding out that it is wise to aerate before cooling milk, particularly so when it is to be manufactured into cheese.

This department has demonstrated that when milk is thus cooled over night and the fresh warm milk of the next morning was added to it, there was a decided risk of spoiling the whole product. Producers and manufacturers are fast learning that the mornings and night's milk must be kept separated or the whole mass may become tainted; it is believed that the reason for this greater liability for the mixed milk to acquire taint is on account of the accumulation of the germs of ferment and the bacteria which produce putrefaction during the cold state of the milk.

This department has persistently advised the patrons of cheese factories never to mix their milk when one portion has been chilled and the other not. During the past season a better system has been taught, aeration, as I have remarked; the utmost pains has been taken to bring it to the attention of the people. The butter experts have been directed to recommend the system and to explain it to the dairymen. No especial device has been recommended. Several have been brought out by the inventors, all of which will perform the work. The following cuts represent those which have come to our notice:

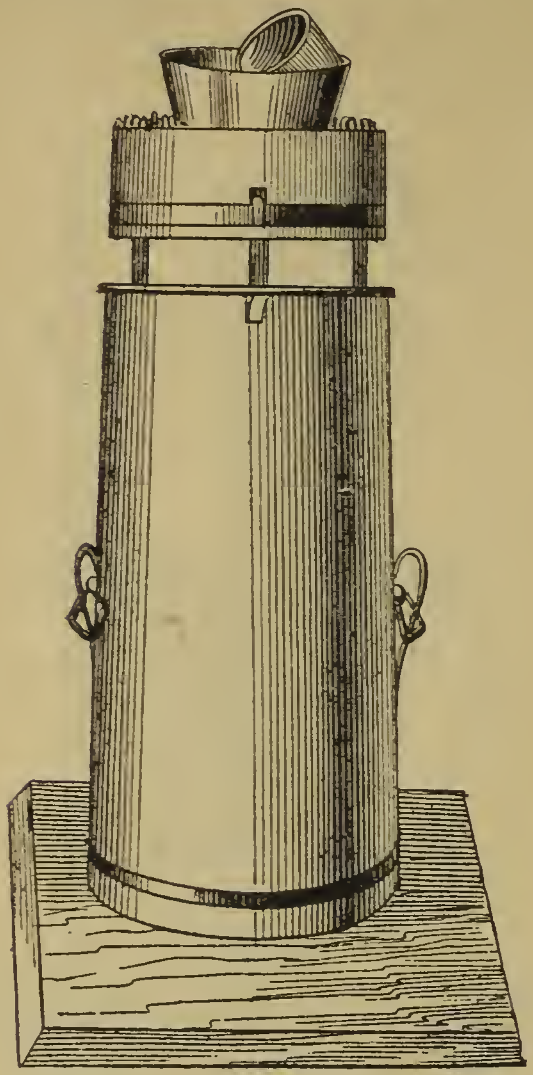


The accompanying cut represents a simple apparatus, which may be manufactured and used by anybody for the aeration of milk. It is described as follows:

Use a pail of usual diameter, of depth enough to hold two and one-half pails of milk; drill a row of one-sixteenth holes in the bottom around the outside three-eighths of an inch apart; make a hoop of band iron one inch in width and one-quarter of inch thick, with a three-quarter inch square iron riveted to it on one side as an arm to slip through a standard. This can be suspended over the can in several ways, but is usually used as follows:

Take a piece of two-by-three hard wood scantling (long enough to permit the pail being raised to a sufficient height above can); cut a slot in the bottom so it will slip on to the handle of the can easily; cut another slot where the top of the can comes; through this pass an iron rod hooked at one end so as to slip on to the top of the can, with a nut on the other end to tighten up against the stick; this will keep it in position; cut at least three square holes near the top end of the stick, so the pail can be raised or lowered according to the wind.

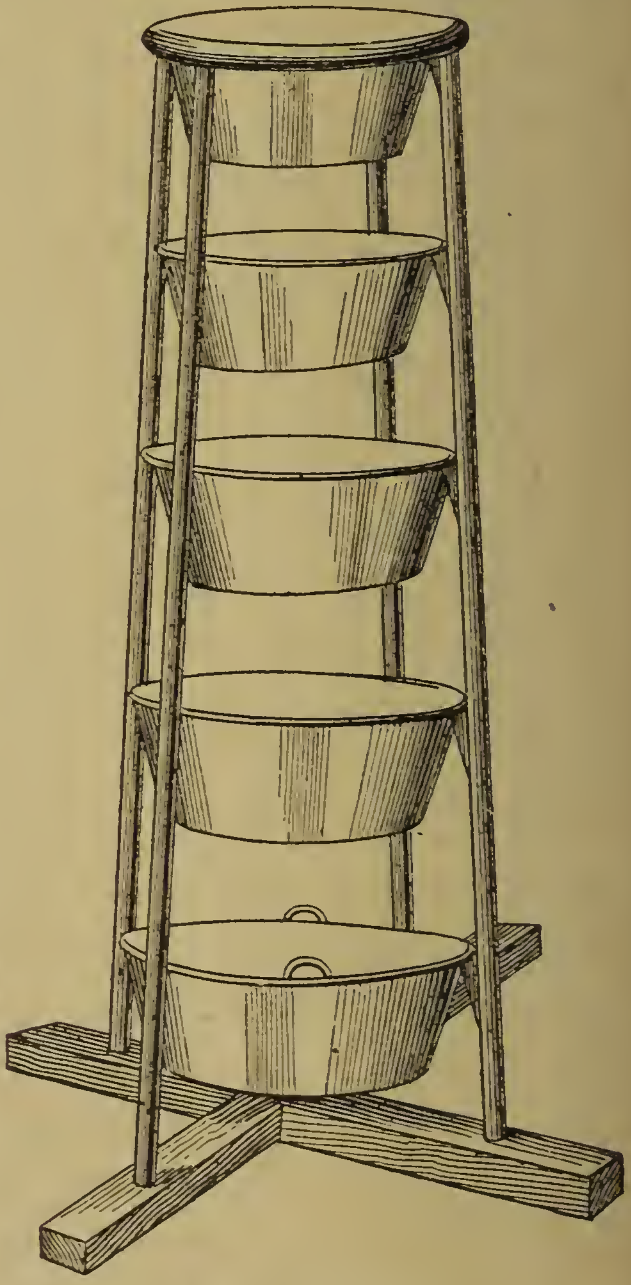
The following is a cut of the Mallery reversible milk can cover and aerator for dairymen delivering milk to cheese factories and creameries, manufactured at Holland Patent, Oneida county, N. Y.:



MALLERY REVERSIBLE CAN COVER.

This device is very simple and requires no extra time to manipulate. It is the cover of the can perforated with small holes, which permits the heat from the milk to escape while en route to the factory. When used as an aerator at milking time, it is simply turned bottom side up upon light standards resting upon top of can, and the milk strained into it, through which it runs in small streams into the can.

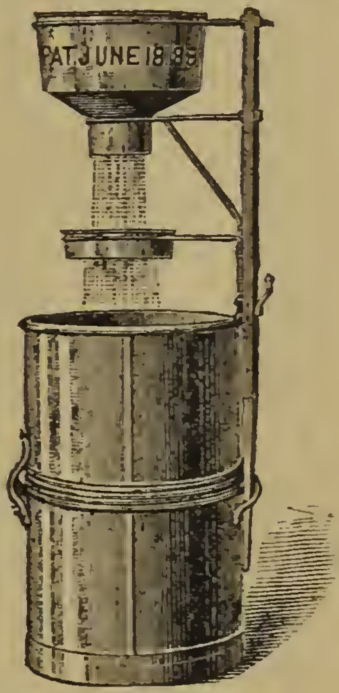
The accompanying cut represents the Mallery aerator, manufactured at Holland Patent, Oneida county, N. Y.:



MALLERY AERATOR.

This aerator has four standards into which five pans are placed (these can be raised or lowered at will, according to the wind, by changing them to other notches in the standards). The bottoms of these are perforated with small holes. This aerator is set on a stand a trifle higher than the shipping can; the milk is strained into the top pan immediately after milking, runs down through the five pans and out of the bottom one through a faucet into the can, it is thus exposed four times in small streams to the air.

DIRECTIONS FOR THE USE OF HODGKIN'S MILK AERATOR, MANUFACTURED AT GOUVERNEUR, N. Y.



First, fit the standard to the handle of the can so that it will slip up and down easily, then place the little iron clasp at the top of the can, fasten this tightly by means of a hand-nut, making the standard secure and solid. Then place the lower screen in position, also the small ring which holds up the receiver; before fastening this, see that it holds the receiver level and directly over the lower screen. When in right position, place a screw at the bottom of the brace and tighten the nut on the standard (this should never be removed, except for repairs). Then place the large wire ring around the top, which will hold the receiver securely in position; place a cloth over the top of the receiver for a strainer. This is held up by a ring which fits on the inside of the receiver, or it can be caught on the outside and held by the large ring. A cloth is used because it takes out the fine dirt more thoroughly than any other strainer. The most perfect result will be derived by placing the lower screen about ten inches from the bottom of the receiver and as much space above the top of the can as possible, but in case of wind they must be brought closer together and brought nearer to the top of the can.

Aeration can be accomplished by simply dipping the milk from one can into another. The work can be better done by allowing the milk to run from the dipper in a thin sheet. No doubt it is more effectual to cause it to drop slowly or to pass through the air in fine streams like spray. Any device which will allow pure air to pass freely through the milk is good, and will tend to dispel the odors; the more thorough the mixture of pure air and the milk the better and more effectual the aeration. The device which will permit a current of pure air to pass through the milk as strongly as possible without causing the milk to fall outside of the vessel receiving it is the best ; while cooling retards the action of the deleterious agents it does not remove them. It drives out the animal heat but does not remove the odors, the odors and gases are rather held in the milk by it. Animal heat does not differ from any other heat; it is not that which affects the milk or makes trouble in the cheese vat. There is such a thing as milk odor which is not animal heat; this odor varies with circumstances. It is increased in hot weather, which seems to be caused by a deranged physical condition of the cow. The lack of aeration has cost the cheese producers of New York hundreds of thousands of dollars and has had a constant tendency to lower the quality and standard of New York State cheese; what aeration removes from the milk is the cause of most of the floating curds. Many persons can not use milk on account of the odor which it has when new. This is not because it is warm, but it is the result of odoriferous gases in it; when cooled suddenly these are retained and when the milk is warmed again it will contain more or less of these odors. The thing to do is to get them out and this can only be done by thorough aeration.

The experts connected with this department have endeavored to convince cheese-makers that milk is not at its best for making cheese unless thoroughly aerated as soon as taken from the cow, and kept till it is ripe. The term "ripe" is used to denote the best condition of the milk for cheese-making, and can be defined as milk freed from animal odors and held in a preservative state until there is a change from the sweetness which characterizes fresh milk to a condition at which acidity would soon be developed. It is not sour and only a skilled maker knows just when milk is ripe.

The health of cows, as well as the food they eat, has a marked effect on the composition and character of the milk. The solids will vary in their proportions from the effects of health and foods, as will also the odors in the milk. The odors, if left in, will affect the flavor of the product. Odor in milk is, therefore, to a certain extent, flavor, in the product. These correlative facts will quite often account for the bad flavor of butter which may be made by rules, which ordinarily produce that of an excellent flavor. It is then important that milk should be aerated, if butter of the uniform flavor is to be produced and if the butter is to be freed from the risks of the odors of the milk. Not every pail of milk is so odoriferous as to require all the precautions but, undoubtedly, the great bulk is; therefore in order to be safe there is no other way than to aerate the whole of the milk and to do it immediately after milking. With these facts before him it would seem that the milk producer would see that the first and most important thing is to rid the milk of the animal odor, if he wishes to make food that is wholesome and that will keep in good condition the longest possible time. The question for him to decide is how can this be most effectually done with the least work. I am satisfied that some form of an elevated strainer attached to or used in connection with the can is the best for the average milk producer, for the reason that it requires very little extra work and is naturally used immediately after milking, which is the best time for most effectually ridding the milk of these odors.

BETTER CHEESE.

The cheese-makers of New York can never expect to reach the high standard possible for them without taking these precautionary measures. The dairymen of other sections will do it and if we do not we will fall behind. The standard for New York State cheese can not be set too high. We must advance. We can not even stand still. The future of cheese-making points to greater skill and more scientific effort in all the work relating thereto. The expert cheese-makers have produced beneficial results by improving the methods of manufacture and correcting deficiencies in the quality and flavor of the product.

Your honorable body can not fail to see that greater merits for our dairy products must lie along the line of perfection. The markets are constantly glutted with poor cheese and butter; this accumulation of poor products not only loads the market but drags down the price. I shall take pleasure in doing everything within my means and power to so change conditions and methods that the products of our dairies may be brought to greater perfection and value. To this end not only is this department endeavoring to formulate a standard for a perfect cheese for general market consumption, but also to find out by extended analyses of milk under all conditions of food and care, what conditions and food will produce the best milk for cheese and butter-making. Other manufacturers have standard goods with which they are successful. It is my idea to apply this sound and wise business principle to the manufacture of dairy products. The want of method and the lack of positive knowledge in the detail and science of dairying have brought the business to the threshold of loss and discouragement.

It is a principle generally recognized that it is the duty of all to add their share to the beneficent work of promoting public prosperity and enhancing the value of the property of the people. To do this, business must be made to pay; in our dairy interests we must keep pace with the demands of the consumer and the changes of the relations of markets, transportation and competition. Whether there are any whose relations and position are such that they do not promptly and fully appreciate this question may matter little as to the question of what ought to be done; it is certainly necessary that special aid and constant effort be given in this direction.

State Brand.

It is to the credit of our makers that there is more demand for the State brand, a larger number having been issued the present season than ever before; orders from outside the State for cheese bearing it are increasing. This shows a growing appreciation of care and character in cheese-making, and points towards the time when "skim-cheese" will cease to be an important factor of the market. Dealers in New York say that they have seen a decided improvement in the quality of the cheese coming to that market since the cheese instructors commenced their work among the factorymen of the State. They agree that the method of manufacture as at present pursued by the instructors of this department is benefiting the public by producing a uniform first-class product. The great demand for cheese, bearing the State brand, is reducing the manufacture of "skim-cheese."

The trade generally believe that the branding law of the State has given a standing to the cheese bearing the brand that is worth much to both the producer and dealer. The following extracts from a few of the letters received at this office show the views of some of the buyers and manufacturers concerning the use of the brand:

East Randolph, N. Y., *March* 17, 1890.

I have cheese brand No. 855. I wish to use it this season, and have already begun to make cheese which I wish to have the State brand on when sold.

Yours truly.

SEMAS CARPENTER.

FORT PLAIN, N. Y., *March* 26, 1890.

Yours of the twenty-first has been received. We would wish to retain the number, having had unusual good success last season.

Very truly.

M. E. SIMMERMAN.

WATERTOWN, *May* 20, 1890.

J. K. BROWN, *Commissioner:*

SIR.—Inclosed please find application for State brand, for the North Rodman cheese factory. Cheese sold for one-eighth cent more for the last Saturday on our produce exchange that carried State brand than cheese that did not have it. Hence factorymen are now hustling for the brand.

Respectfully.

CHAS. S. KELLOGG.

BROOKFIELD, N. Y., *June* 9, 1890.

State Dairy Commissioner:

DEAR SIR.—We would like one (a State brand) as soon as convenient, as we are shipping cheese *without it* and at a loss to us.

Very respectfully yours.

YORK BROS.

OFFICE OF WILLIAM C. BURDICK & CO.,
DEALERS IN ALLEGANY CHEESE,
ALFRED CENTRE, *June* 13, 1890.

J. K. BROWN, Esq., *State Dairy Commissioner, Albany, N.Y.:*

Will you please send to the persons named full-cream State brands (small sized). We want them to *use* the brands on their cheese.

Yours truly.

W. C. BURDICK & CO.

G. E. Seager,
Wholesale Dealer in Butter and Cheese,
Randolph, N. Y., *June* 14, 1890.

Hon. J. K. Brown:

Dear Sir.— Please send application blanks to the following named persons, and oblige.

I *am determined* to have every factory that I buy the cheese of use the State brand.

Yours, etc.
G. E. SEAGER.

Godard & Bond, Dealers in Groceries,
Paints, Crockery, Sporting Goods, Etc.,
Mayville, N. Y., *June* 9, 1890.

We would like to have our State brand again. Mr. Underhill, of New York, says he *wishes us* to *use it.*

Yours.
GODARD & BOND.

Mill's Mills Factory, *September* 17, 1890.

Will you have the kindness to send me a State plate for full-cream cheese. I have made none other but full cream, but buyers of cheese give me the advice to put the State brand on it.

Yours truly.
Hume, Allegany County, N. Y. R. L. BOLLER.

Gray, *March* 20, 1890.

The brand 217 is in my possession and is all right. Intend to use it this season.

The branding of cheese I consider one of the most important things that pertains to the welfare of the farmer, and every man that takes his cheese or sends it to the market without the brand claiming it to be full cream cheese should be compelled to use the brand since the State furnishes it to those who feel disposed to use it. We have labored under great embarrassment in having cheese without the brand classed with the full cream, when, in fact, a portion of the cream had been taken off.

I think every one that is interested in making first-class cheese would favor a bill compelling the use of the brand.

C. B. BULLOCK.
Gray, Herkimer County, N. Y.

The following is the list of the State brands now in use:

ALLEGANY COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Abbott No. 1	I. N. Sheldon	Cuba.
Abbott No. 2	I. N. Sheldon	Cuba.
Allegany	I. N. Sheldon	Cuba.
Allen	J. R. Lamont	Belfast.
Allentown	Wetherby & Allen	Allentown.
Almond	A. J. Fenner	Almond.
Andover	W. F. Snyder	Andover.
Angelica Union	W. L. Hogg	Angelica.
Amsden	L. J. Sizer	Cuba.
Baker	James A. Baker	Angelica.
Belfast	A. E. Perry	Belfast.
Bennett's Creek	B. S. Bassett	Alfred Center.
Black Creek	E. M. Beebe	Black Creek.
Brookside	M. E. Gordon	Rushford.
Caneadea	Albert C. Millard	Caneadea.
Clarksville Center	M. M. Congdon	West Clarksville.
Cold Spring	Z. Hall	Alfred.
Collins	Alvin C. Baker	Alfred Center.
Cottrell's	John Cottrell	Alfred.
Cryder Creek	Elmer S. Wood	Whitesville.
County Line	Young & Young	Filmore.
Cuba Valley	Halstead & Wasson	Cuba.
Deyden Ridge	John L. Coyle	Andover.
East Centerville	John S. Sawyer	Centerville.

East Friendship	W. A. Dayton	Friendship.
East Hill	M. C. Mulkin	Friendship.
Elm Valley	L. D. Collins	Alfred Center.
Empire	W. E. Child	State Road.
Farm Dairy	Wells & Vreeland	Oramel.
Fillmore	Young & Young	Fillmore.
Five Corners	E. P. Fenner	Alfred Centre.
Forest	Will H. Reid	Obi.
Genesee Valley	W. Ward Rice	Friendship.
Gilt Edge	F. J. Brown	Belmont.
Halls, A. E	Alvin E. Hall	Scio.
Hallsport	T. J. Carmody & Co	Cuba.
Hardy's	John G. James	Rushford.
Hedgesville	T. J. Carmody & Co	Cuba.
Home	I. N. Sheldon	Cuba.
Houghton	Peter Loftus	Houghton.
Hume	E. A. Hammond	Hume.
Hunt's	Young & Young	Fillmore.
Independence	Charles F. Potter	Independence.
Jasper	T. J. Carmody & Co	Cuba.
Karr Valley	Walter McHenry	Karrdale.
Kellogg	E. L. Beebe	Caneadea.
Kellor Hill	O. J. Reynolds	Black Creek.
Keystone	M. H. Crofoot	Aristotle.
Lafferty	James Loftus	Black Creek.
Little Genesee	C. A. Thompson	Little Genesee.
Marshall	John R. McVey	Marshall.
McGrawville	F. W. Hogg	New Hudson.
Mill's Mills	R. L. Boller	Hume.

ALLEGANY COUNTY — (*Continued*).

NAME OF FACTORY.	Applicant.	Post-office.
Mount Monroe	A. L. Olthop	Rushford.
Murray Corners	Bernard Murray	Andover.
New Hudson Centre	M. J. Dunn	Black Creek.
Niles	M. C. Mulkin	Friendship.
North Cuba	O. J. Warren	Cuba.
Oramel	A. E. Perry	Belfast.
Phillip's Creek	C. L. Richardson	Phillip's Creek.
Pleasant Valley	H. J. Edwards	Alfred.
Pleasant Valley	O. J. Folts	Cuba.
Podunck	W. H. Thomas	Rushford.
Rice	Herman Rice	Friendship.
Richburg	Herman Lebar	Richburg.
Rockville	A. E. Perry	Belfast.
Rush Creek	C. K. Farnsworth	Fillmore.
Scio	Gilbert Bliven	Scio.
Shongo	E. B. Jewell	Caneadea.
Short Track	Young & Young	Fillmore.
Slater Creek	A. E. Swain	Canaseraga.
Smith	Curtis Smith	Bolivar.
Sounds	Isaac Bullock	Black Creek.
South Bolivar	A. A. Sizer	South Bolivar.
Spring Mills	C. H. Austin	Spring Mills.
Vandemark	Geo. E. Dodge	Scio.
West Fowler	Brad Sterling	Antwerp.

West Hill	Ernst Herke	West Allen.
White Creek	W. E. Wilkinson	Belfast.
Wildman	J. H. Wood	Whitesville.
Wiscoy	Young & Young	Fillmore.
Woodhull	T. J. Carmody & Co	Cuba.

BROOME COUNTY.

E. M. Johnston	H. B. & R. Johnston	Vallonia Springs.
Holcomb	S. N. Leach	Tunnel.
Lester	E. B. Hale	Lester.
North Fenton	H. L. Miller	North Fenton.
Port Crane	S. Mills Ely	Binghamton.
West Windsor	DeWitt Hall	West Windsor.
Windsor Creamery	U. T. Wooster	Windsor.

CATTARAUGUS COUNTY.

Ashford	John M. Zeilman	Ashford Hollow.
Axville	Wells J. Bigelow	East Randolph.
Block	E. L. Jones	Yorkshire Centre.
Bullock	Geo. E. Hogg	Franklinville.
Cattaraugus	F. Hufstader & Co	Cattaraugus.
Centerville	E. L. Jones	Yorkshire Centre.
Champlin No. 1	W. M. Champlin	Little Valley.
Cold Spring	D. H. Thompson	Randolph.
Cottage	James Poland	Cottage.
Dayton	O. W. Catlin	Dayton.
Eagle	Gampp Bros	East Otto.
East Leon	Albert Howard	East Leon.
East Otto	Gampp Bros	East Otto.

CATTARAUGUS COUNTY — (*Concluded.*)

NAME OF FACTORY.	Applicant.	Post-office.
Elgin	E. J. Thompson	Elgin.
Ellington No. 7	D. A. Cowan	East Randolph.
Farmersville No. 1	C. E. Wright	Machias.
Farmersville No. 2	C. E. Wright	Machias.
Fay Hollow	E, C. Alsworth	Hinsdale.
Five Mile Union	Edwin G. Adams	Allegany.
Five Points	F. Hufstader & Co	Cattaraugus.
Four Miles	J. B. Jewel	Allegany.
Haskell Flats	Peter J. Pettit	Haskell Flats.
Highland	Wilbur A. Hopkins	Conewango.
Hopkins, I. M	I. M. Hopkins	Portville.
Java Lake	E. L. Jones	Yorkshire Centre.
Lime Brook No. 1	P. F. Jark	Otto.
Lime Brook No. 2	P. F. Jark	Otto.
Lime Brook No. 3	P. F. Jark	Otto.
Lime Brook No. 4	P. F. Jark	Otto.
Lime Brook No. 5	Charles Busekist	New Albion.
Little Valley Centre	Truman Winship	Little Valley.
Little Valley	J. C. Griffith	Little Valley.
Lower Haskell	James J. Kirby	Olean.
Mokinstry Hollow	E. L. Jones	Yorkshire Centre.
Mosher	F. Hufstader & Co	Cattaraugus.
Narrows	J. C. Brigham	Little Valley.
North Leon	A. D. Ackler	Leon.

North Otto Union	Samuel Charlesworth	Otto.
North Valley	Wm. Eddy	Little Valley.
Otto Union No. 1	J. S. Hanson	Otto.
Otto Union No. 2	C. A. Facklan	Cattaraugus.
Peacevale	Daniel Newtown	Leon.
Perrysburgh	R. McCubbin	Perrysburgh.
Pike Centennial	E. L. Jones	Yorkshire Centre.
Pritchard	E. C. Pritchard	Cattaraugus.
Randolph No. 1	Zenas Carpenter	East Randolph.
Randolph No. 2	E. V. Carpenter	Randolph.
Randolph No. 3	Samuel Carpenter	Randolph.
Randolph No. 4	Thomas Carpenter	Conewango.
Randolph No. 5	Herman Ferrier	Conewango.
Rock Spring No. 1	J. R. Holden	Franklinville.
Rock Spring No. 2	J. R. Holden	Franklinville.
Rock Spring No. 3	J. R. Holden	Franklinville.
Rock Spring No. 4	J. R. Holden	Franklinville.
Scott's Corners	C. B. Alsworth	Hinsdale.
South Napoli	F. Hufstader & Co	Cattaraugus.
Spring Valley	W. T. Peaslee & Son	East Randolph.
Stebbins	F. Hufstader & Co	Cattaraugus.
Stone	D. J. Thompson	Elgin.
Teft	Gampp Bros	East Otto.
Union	F. Hufstader & Co	Little Valley.
Union	Gampp Bros	East Otto.
Vedder Corners	John M. Zeilman	Ashford Hollow.
West Yorkshire	E. L. Jones	Yorkshire Centre.
Wilson	W. H. Howden	Ischua.
Yorkshire	S. E. Ford	Yorkshire.
Yorkshire Centre No. 1	E. L. Jones	Yorkshire Centre.

CAYUGA COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Ira	Edson H. Brigham	Ira.
Locke	S. S. Bemis	Locke.
Moravia Association	Edward Parsons	Moravia.
Sales Corners	Henry A. Day	Kelloggville.
Victory Association	W. H. Fraser	Victory.

CHAUTAUQUA COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Alden	Augustus D. Alden	Sinclairville.
Arkwright Centre	Frank W. Horton	Arkwright.
Arkwright Valley	A. J. Cowden	Laona.
Blockville	Geo. Smith	Blockville.
Boomertown	Susie B. Woods	Boomertown.
Canadawa	John C. Griswold	Fredonia.
Card's	F. M. Parkhurst	Clymer.
Cassadaga	A. V. Pickard	Sinclairville.
Centralia	Joseph D. Wilder	Centralia.
Charlotte Centre	F. L. Clark	Charlotte Centre.
Charlotte Union	G. Elmerton Mount	Charlotte Centre.
Chautauqua Hill	G. M. Goldthwaite	Hartfield.
Cipperley's	W. H. Cipperly	Moons.
Climax	A. E. Hale	Fluvana.
Cordova	A. J. Cowden	Laona.
Cutting Brook	Henry R. Case	Clymer.
Ellery	George I. Barnes	Ellery.

Ellington No. 1	E. F. Rowley	Ellington.
Ellington No. 2	E. F. Rowley	Ellington.
Ellington No. 3	E. F. Rowley	Ellington.
Ellington No. 4	E. F. Rowley	Ellington.
Ellington No. 5	E. F. Rowley	Ellington.
Ellington No. 6	E. F. Rowley	Ellington.
Farmers'	Charles J. Mason & Co	Conewango Valley.
Findley's Lake	A. C. Tillotson	Findley's Lake.
Goshen	James Pardee	Bear Lake, Pa.
Hamlet	Delos Tanner	Hamlet.
Keeler's Corners	Wm. T. Green	Sherman.
Lewis	S. W. Lewis	Stockton.
Limwood No. 1	C. D. Leonard	Cherry Creek.
Limwood No. 3	C. D. Leonard	Cherry Creek.
Maple Grove	N. G. Dunham	Sinclairville.
Mayville	J. J. Seymour	Mayville.
Morgan's Corners	J. I. Parkhurst	Clymer.
Nashville	C. Montgomery	Nashville.
Rawson	T. M. Metcalf	Rawson.
Rood	A. J. Rood	Sinclairville.
Snyder Comb. No. 3	O. H. Snyder	Norfolk, Pa.
Waite	J. N. Palmer	Cassadaga.
Warner	J. C. Blanchard	Sinclairville.
Watt's Flats	J. W. White	Watt's Flats.
West Ellery	W. L. Barnes	Bemus Point.
White Clover No. 1	John McAdams	Forestville.
White Clover No. 2	John McAdams	Forestville.
White Clover No. 3	John McAdams	Forestville.
White Clover No. 4	John McAdams	Forestville.
White Clover No. 5	John McAdams	Forestville.

Chenango County.

NAME OF FACTORY.	Applicant.	Post-office.
Church	Dewitt C. Church	Afton.
Coventryville	Clark L. Horton	Coventryville.
Cowles	J. L. Carter	Brisben.
Davis, B. F	A. Orlando Poole	Lincklaen.
Fly Creek	Barber & Miner	Oxford.
Guilford Summit	James Murray	Guilford.
Lyon Brook	E. L. Haynes	Oxford.
Marcy	L. A. Gross	Greene.
Peck, R. B	Richard B. Peck	South New Berlin.
Plymouth	Geo. B. Cushman	Plymouth.
Smyrna Hill	David Campbell	Smyrna.
South Plymouth	C. M. Dickerson	South Plymouth.
Trout Brook	Curtis Kenyon	Mariposa.

Clinton County.

NAME OF FACTORY.	Applicant.	Post-office.
Churubus Co	A. D. Boomhower	Plattsburgh.
Peru	A. D. Boomhower	Plattsburgh.

Cortland County.

NAME OF FACTORY.	Applicant.	Post-office.
Collier, Frank J	Frank J. Collier	Preble.
Como	J. A. Shaver	Cortland.
Davis	Seth Davis	Messengerville.
DeLong, W. H	Willis H. DeLong	Taylor Centre.
East Freetown	J. G. Howard	East Freetown.

Marathon Milk Depot	Henry F. Huntemann	Marathon.
Homer West Hill	J. A. Shaver	Cortland.
Meachim	J. W. Hallock	Marathon.
North Solon	B. D. Greenman	McGrawville.
Sears.	Frank H. Sears	Cortland.
Trout Brook	Charles F. Davenport	McGrawville.
Truxton	Wm. McAdam	Truxton.
Union	Omar Andrews	Little York.
Union Valley	Irvin D. Hughes	Union Valley.
Wightman's	Homer Wightman	Marathon.

DELAWARE COUNTY.

Stratton's Falls	R. S. Smith	Roxbury.

ERIE COUNTY.

Cloverfield No. 1	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 2	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 3	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 4	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 5	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 6	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 7	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 8	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 9	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 10	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 11	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 12	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 13	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 14	Richardson, Beebe & Co	East Aurora.

ERIE COUNTY — (*Concluded*).

NAME OF FACTORY.	Applicant.	Post-office.
Cloverfield No. 15	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 16	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 17	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 18, 19.	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 20	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 21	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 22	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 23	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 24	Richardson, Beebe & Co	East Aurora.
Cloverfield No. 25	Richardson, Beebe & Co	East Aurora.
Springville No. 1	Clair Bros	Springville.
Springville No. 2	Clair Bros	Springville.
Springville No. 3	Clair Bros	Springville.
Springville No. 4	Clair Bros	Springville.
Springville No. 5	Clair Bros	Springville.
Springville No. 6	Clair Bros	Springville.
Springville No. 7	Clair Bros	Springville.
Springville No. 8	Clair Bros	Springville.
Springville No. 9	Clair Bros	Springville.
Springville No. 10	Clair Bros	Springville.
Springville No. 11	Clair Bros	Springville.
Springville No. 12	Clair Bros	Springville.
Springville No. 13	Clair Bros	Springville.
Springville No. 14	Clair Bros	Springville.

Springville No. 15	Clair Bros.	Springville.
Springville No. 16	Clair Bros.	Springville.
Springville No. 17	Clair Bros.	Springville.
Springville No. 18	Clair Bros.	Springville.
Springville No. 19	Clair Bros.	Springville.
Springville No. 20	Clair Bros.	Springville.
Springville No. 21	Clair Bros.	Springville.
Springville No. 22	Clair Bros.	Springville.
Springville No. 23	Clair Bros.	Springville.

FULTON COUNTY.

Cross Roads	W. D. Stewart	Sammonsville.
Getman, Wm. J	Wm. J. Getman	Ephratah.

GENESEE COUNTY.

Alexander	Sandford Riddle	Alexander.
Byron	H. C. Norton	Byron.

HERKIMER COUNTY.

Ash Creek	Thorn E. Curtis	Ohio.
Avery & Ives	R. H. Strough	Salisbury Centre.
Baker Home	J. C. Morgan	Mohawk.
Bartlett, R	Rush Bartlett	Winfield.
Bastow Hill	J. W. Ford	Fairfield.
Big Spring	W. McKerron	Middleville.
Brighton	J. C. Morgan	Mohawk.
Cedarville	L. C. Smith	Herkimer.
Clover Leaf	L. J. Miller	Columbia.

Herkimer County—(*Continued*).

NAME OF FACTORY.	Applicant.	Post-office.
Clover Valley	C. A. Ford	Little Falls.
Cold Brook	B. R. Brown	Newport.
Cold Spring	Terrence Atkins	Little Falls.
Columbia Centre	N. J. Harter	Columbia.
Countryman	M. Getman	Mohawk.
Cullen	C. Garline	Cullen.
Davis, Geo. H	Geo. H. Davis	Frankfort.
Dennison's Corners	M. Getman	Mohawk.
East Creek	Willard Snyder	East Creek.
East Schuyler	S. P. Lints, Jr.	East Schuyler.
Elizabethtown	L. C. Smith	Herkimer.
Fay	J. C. Morgan	Mohawk.
Fenner	Charles Pound	Fairfield.
Frankfort	J. C. Morgan	Mohawk.
Fulmer Creek	O. D. Chrisman	Mohawk.
Galusha	Oliver H. Springer	Starkville.
Getman, M	M. Getman	Mohawk.
Gilt Edge	L. C. Smith	Herkimer.
Gulph	S. W. Norton	Gulph.
Herkimer	Peter Miller	Herkimer.
Hickory Grove	W. J. Jones	Danube.
Hider	J. C. Morgan	Mohawk.
Hickley G.	E. H. Hughes	Gravesville.
Johnson	E. P. Johnson	Ingham's Mills.

Jordanville	M. Getman	Mohawk.
Lanning	W. B. Lanning	Russia.
LaRue	L. A. LaRue	Little Falls.
Little Falls	Hiram Broat	Little Falls.
Lyon, J. H.	J. H. Lyon	Cold Brook.
Manheim, Slate Hill	Luke Snell	Little Falls.
Maple Grove	Burton Walts	Van Hornesville.
Middleville	A. W. Ford	Middleville.
Miles Moore	Miles Moore	Russia.
Mohawk Valley	Seaman Garline	Little Falls.
Monitor	C. B. Bullock	Gray.
New Manheim	John Garlock	Little Falls.
Newport Hill	J. M. Haskell	Poland.
Newville Association	N. W. Irwin	Newville.
North Litchfield	H. H. Davis	North Litchfield.
North Schuyler	C. G. Babcock	Newport.
Norway	H. C. Nichols	Norway.
North Winfield Combination No. 1	C. T. Wheelock	West Winfield.
North Winfield Combination No. 2	C. T. Wheelock	West Winfield.
North Winfield Combination No. 4	C. T. Wheelock	West Winfield.
North Winfield Combination No. 5	C. T. Wheelock	West Winfield.
North Winfield Combination No. 6	C. T. Wheelock	West Winfield.
Old Fairfield	E. C. Rice	Fairfield.
Old Manheim	Joseph Rice	Little Falls.
Old Salisbury	Alfred Vannais	Salisbury.
Paine's Hollow	George H. Van Slyke	Edick.
Poland	John B. Reed	Poland.
Rast Bridge	Alvin Countryman	Herkimer.
Rising Star	James A. Krum	Paine's Hollow.

HERKIMER COUNTY — (*Concluded*).

NAME OF FACTORY.	Applicant.	Post-office.
Russia	N. M. Moon	Middleville.
Schuyler Centennial	W. V. Minot	East Schuyler.
Shell's Bush	Marcus Rasbach	Little Falls.
Short Lots	W. W. Richardson	West Schuyler.
Small's Bush	Adam Casler	Little Falls.
Spring	Darius Small	Little Falls.
South Columbia	M. Getman	Mohawk.
Star	William J. Skinner	Little Falls.
Sterlings	N. J. Sterling	West Schuyler.
Sterling Creek	C. G. Babcock	Newport.
Van Hornesville	B. A. Whipple	Van Hornesville.
Vedder	John Vedder	Van Hornesville.
Wait	A. E. Snyder	Gray.
West Canada Creek	Stephen S. Stuber	Poland.
Wetmore, C. W	Charles W. Wetmore	Frankfort Hill.
Wheeler, Knapp	Isaac Fox	Dolgeville.
White Creek	John Baird	Newport.
Wyckoff	J. C. Morgan	Mohawk.

JEFFERSON COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Belleville	Ingraham, Overton & Co	Belleville.
Bullock	C. D. Hitchcock	Worthville.
Cascade	B. R. Means	Burr's Mills.
Champion Village	Colburn & Loomis	Champion.

Cold Brook	S. E. Walts	Omar.
Collin's Landing	Walter Collins	Omar.
Cooper, I. C	I. C. Cooper	Theresa.
Cooper, I. C	I. C. Cooper	Theresa.
Cooper, I. C	I. C. Cooper	Theresa.
Douglass	John P. Douglass	Theresa.
Drill Well	C. W. Cheney	Sterlingville.
Farmer's	F. V. Hass	Depauville.
Fillmore Bros	H. H. & M. M. Filmore	Woodville.
Fox, G. A	M. H. Fox	Lorraine.
Gould	Gould & Bacon	Pamelia Four Cor's.
Henderson	E. Fales	Henderson.
Howards	David H. Schull	Stone Mills.
Lake View	W. A. Eppie	Sacketts Harbor.
Line Road	R. P. Grant	Clayton.
Lorraine Village	M. H. Fox	Lorraine.
Maple Grove	A. M. Brown	Lorraine.
Mather Bros	Simeon Mather	Belleville.
North Rodman	F. M. Parker	Watertown.
Pamelia	E. B. Nichols	Watertown.
Parkinson	Phineas Parkinson	Watertown.
Philadelphia	W. S. Keyes	Philadelphia.
Philadelphia	Geo. Flath	Philadelphia.
Pitkin	L. S. Pitkin	Lorraine.
Riverside	J. P. Carpenter & Son	Ox Bow.
Rock Bottom	Benj. Worthingham	Henderson.
Rodman Village	M. G. Wilson	Rodman.
Smith, A. J., No. 1	Anson J. Smith	Mannsville.
Smith, A. J., No. 2	Anson J. Smith	Mannsville.

JEFFERSON COUNTY.—(*Concluded.*)

NAME OF FACTORY.	Applicant.	Post-office.
Spring Side	Geo. A. Lowe	North Centre.
Stanley	B. B. York	Smithville.
Stone, E. L., No. 1	E. L. Stone	Mannsville.
Stone, E. L., No. 2	E. L. Stone	Mannsville.
Stone, E. L., No. 3	E. L. Stone	Mannsville.
Stone, E. L., No. 4	E. L. Stone	Mannsville.
Thousand Island	L. W. Cousard	Clayton.
Tylerville	Byron Dickerson	South Rutland.
Wardwell	F. W. Matterson	Pierrepont Manor.
Warren Settlement	Lewis Cornair	Rosiere.
West Rodman	J. Sterling Sill	Rodman.
Woodville	Geo. M. Wood	Woodville.
	LEWIS COUNTY.	
Alger, G. S	George S. Alger	Martinsburgh.
Beach Hill	Joseph Merz	New Bremen.
Boston Brand	Wm. I. Young	Lanesburgh.
Champion Spring	Christian Hirschy	Beaver Falls.
Christien, F. N	F. N. Christien	Osceola.
Cloverdale	Alfred Blum	Lyden.
Cold Spring	Chandler E. Merz	Chroghan.
Collinsville	James Roberts	Collinsville.
Copenhagen	Frank J. Stockwell	Copenhagen.
Dairy Hill	David Miller	Constableville.

Denmark	A. & H. E. Cook	Denmark.
Eagle	E. G. Graves	Lowville.
Farmers' Choice	Wm. E. Gaynor	New Bremen.
Fish Creek	Henry G. Deis	Constableville.
Gallaway	Francis J. Case	Lowville.
Grass Valley	Wm. D. Lewis	Turin.
Harold Valley	N. J. Henry	Chroghan.
High Mark	W. H. Fitch	Lowville.
Houseville	J. H. Smith	Houseville.
Katsmayer	Andrew Katsmayer	West Leyden.
Miller	Stephen T. Miller	Constableville.
Mohawk Hill	M. B. Farrell	Constableville.
Moose Creek	W. J. Mellon	Leyden.
Mullen	C. A. Higby	Constableville.
New Boston	T. W. McGrath	New Boston.
New Model	Clinton A Fox	Copenhagen.
Perkins, G. W	G. A. Perkins	Turin.
Petrie	Henry Petrie	Turin.
Plummer	Geo. Plummer	Constableville.
Rising Star	Clinton A. Fox	Copenhagen.
Riverdale	A. W. Van Arnam	Greig.
River Street	F. W. Knowlton	Copenhagen.
Rock Spring	Mrs. E. S. Davis	West Leyden.
Silver Spring	M. Sheldon	Copenhagen.
Sins & Bierlie	Joseph Sins	West Leyden.
Star	Bohrer & Keller	West Leyden.
Sulphur Springs	J. H. Searl	Lowville.
Valley	Charles Austin	Glendale.
West Leyden	Michael Ernst	West Leyden.

LIVINGSTON COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Dalton	Mrs. J. B. Wheeler	Dalton.

MADISON COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Beaver Creek	Wm. W. Clark	Brookfield.
Blanding	F. Blanding	Hubbardsville.
Brown, D. M	A. M. Nichols	Brookfield.
Bullock, C. F	C. F. Bullock	Bennet's Corners.
Clockville	C. C. Cooper	Clockville.
Cole	W. G. Hatch	Lebanon.
Crystal Spring	O. J. Tucker	Mile Strip.
DeRuyter Reservoir	S. D. Burdick	DeRuyter.
DeRuyter	Emerson Benjamin	DeRuyter.
Earlville	John Harmon	Hamilton.
East Boston	A. W. Prescott	East Boston.
Excelsior	Mrs. S. R. Hill	Chittenango.
Hamilton	Thomas Stradling	Hamilton.
Harris	Edgar Harris	Brookfield.
Hawks	W. G. Hatch	Lebanon.
Hollenbeck	R. J. Hollenbeck	Peterboro.
Hubbardsville	F. Blanding	Hubbardsville.
Ladd, Dan	Dan Ladd	Canastota.
Lake View	H. M. Stafford	Perryville.
LaMunion & Clark	LeMunion & Clark	Munnsville.
Lennox Mills	Buryea & Miller	Wampsville.

Lindsley, L. S	Lyman Smith Lindsley	Pratt's Hollow.
Marsa & Excelsior	U. N. Holmes	Brookfield.
Morrisville	Fred S. Harwood	Morrisville.
Mott	G. M. Rainey	Leonardsville.
Nelson Centre	E. L. Beebe	Nelson.
Nelson Flats	Edgar L. Beebe	Nelson.
Oneida Valley	A. Burton	Oneida Valley.
Osgood	T. H. Gates	Chittenango.
Paramount	John P. Davis	Nelson.
Perryville	Geo. B. Hill	Chittenango.
Peterboro	Miller & Hill	Munnsville.
Pleasant Brook	W. G. Hatch	Lebanon.
Pleasant Valley	Levi Miller, Jr.	Peterboro.
Quaker Basin	John Hunt	DeRuyter.
Shed's Corners	Alexander Harris	Shed's Corners.
Siloam	A. E. Miller	Munnsville.
Smith's, J. D. F.	J. D. F. Smith	Hamilton.
Solsville	A. N. Peckham	Solsville.
Stockbridge	A. E. Miller	Munnsville.
Stockbridge	L. C. Hinman	Footprints.
Temple	I. A. Wager	North Brookfield.
The Two Elms	O. R. Cole	Solsville.
Union	W. G. Hatch	Lebanon.
Union	C. H. Silliman	Brookfield.
Whalen's	Thomas B. Chapman	Whitelaw.
Williams Corners	W. G. Hatch	Lebanon.
Willow Grove	Edgar L. Beebe	Nelson.
Wadsworth, Geo. G	Geo. G. Grosvenor	Lebanon.
York, L. C	York Bros.	Brookfield.

MONTGOMERY COUNTY.

NAME OF FACTORY.	Applicant.	Post-office.
Brookman's Corners	M. A. Pickert	Fort Plain.
Christman, G. H	G. H. Christman	St. Johnsville.
Crystal Springs	A. Davy	Minden.
Fairview	Hamilton Snell	St. Johnsville.
Fort Willett	M. E. Timmerman	Fort Plain.
Smith Creek	J. Harvey Smith	Fort Plain.
Sprakers	Gustave Bushholtz	Palatine Bridge.
Spraker Basin	James Weaver	Sprakers.
Tribes Hill	W. T. Getman	Tribes Hill.
Waterville	A. B. Miller	Ames.

NEW YORK COUNTY.

Bemus Point	Wm. E. Smith & Co	300 Greenwich street
Leon	Wm. E. Smith & Co	300 Greenwich street
Leon Centre	Wm. E. Smith & Co	300 Greenwich street
Red Bird	Wm. E. Smith & Co	300 Greenwich street
Sample Hill	Wm. E. Smith & Co	300 Greenwich street
Sinclairville	Wm. E. Smith & Co	300 Greenwich street

ONEIDA COUNTY.

Augusta	John W. Skeritt	Augusta.
Augusta Valley	James D. Nelligan	Vernon Centre.
Bartlett	H. J. Wolfe	Bartlett.
B. H	E. D. Franklin	North Western.

Big Spring	John McCartrey	Oriskany Falls.
Blossvale	John Halstead	Blossvale.
Blue Brook	Michael Heily	Ava.
Brodock	A. Brodock	Plains.
Cagwin	A. B. Cagwin	West Vienna.
Castle G	Henry D. Morehouse	Ava.
Cassville	J. J. Davis	Cassville.
Chard	Robert Chard	Washington Mills.
Chickery	T. F. Jones	Clinton.
Clark	Henry E. Blanchard	Vernon.
Cold Spring	Richard J. Williams	Remsen.
Conway	W. M. & S. J. Conway	Remsen.
Cornish	A. Cornish	Camden.
Cream	J. K. Burleigh	Vernon.
Daisy	J. J. Davis	Cassville.
Deansville	C. L. Brooks	Deansville.
Delta	Jay Macomber	Delta.
Donser	Donser Bros	Boonville.
Earle	H. C. Earle	Clinton.
Elmwood	D. R. Griffith	Boonville.
Farmers	Daniel Yourdan	Seila.
Fitch & Bacon	Hiram H. Bacon	Verona.
Floyd Corners	E. E. McFarland	Floyd Corners.
Floyd Hill	Ann Gregg	Floyd Corners.
French Road	Hosea Pritchard	East Steuben.
Greggains, Wm	William Greggains	Glenmore.
Gregoire	Fillmore Gregoire	Ava.
Hatches Corners	Thomas Breckenridge	Greenway.
Hecla	Thomas J. Olney	Hecla.

ONEIDA COUNTY — (*Continued*).

NAME OF FACTORY.	Applicant.	Post-office.
Hilsborough	Ford & Wilson	Camden.
Hodges, W. H	W. H. Hodges	Oriskany.
Jackson	Albert Carroll	Boonville.
Kellogg	E. H. Kingsbury	Sangerfield.
Lawrence, N. B	J. B. Lawrence	Westmoreland.
Lee Centre	Grant Hollenbeck	Lee Centre.
Lowell	Grant A. Hunter	Lowell.
Maple Grove	E. L. McIntyre	North Gage.
Mappa Valley	J. W. Wheeler	Trenton.
Marshal	W. W. Getman	Paris Station.
Marcy Centre	George R. Wright	Marcy.
Meadow Brook	C. C. Miller	Boonville.
Merry G	G. Merry	Verona.
Millers	N. B. Miller	West Camden.
Miller Branch	John Miller	East Florence.
Mullin Hill	Robert Roberts	Delta.
Newell	Mrs. Fanny Sessions	Cassville.
New London	J. J. Sem	New London.
North Bay	Nicholas Van Horne	North Bay.
North Gage	E. Welch	North Gage.
North Steuben	N. H. Folts	Seila.
North Trenton	R. E. Jones	Remsen.
Onion	Sam Wittwer	Oriskany.
Point Rock	C. H. Walters	Point Rock.

Porter	Joel Porter	North Western.
Quaker Hill	John McCurn	West Branch.
Rathbun	Charles Rathbun	Verona Mills.
Reardon, Patrick J	Patrick J. Reardon	East Florence.
Remsen	T. J. Williams	Remsen.
Ridge	R. McAdam	Rome.
River Road	E. J. Bowman	Whitesboro.
Rock Maple Grove	J. H. Wallaber	North Western.
Saulspaugh	Chas. H. Saulspaugh	Lee.
Shean Bros	Shean Bros	Glenmore.
Spring Brook	W. J. McComb	Boonville.
Steuben Association	J. D. Merrick	Steuben.
Steuben Centre	Herbert A. Johnson	Steuben.
Stittville	A. J. Avery	Stittville.
Story	W. H. Story	Westmoreland.
Taberg	George J. Haas	Taberg.
Thomas, R. E	Daniel Jones	Alder Creek.
Union	G. N. Slone	Ava.
Union	John C. Owens	Trenton.
Vernon and Verona	A. J. Burleigh	Vernon.
Verona Landing	H. M Carpenter	Higginsville.
Vienna	Irving Blaiser	Vienna.
Walesville	Thomas Prescott	Walesville.
Walsworth	George Wolfe	Delta.
Waterbury	C. F. Waterbury	Florence.
Walters, C. H	C. H. Walters	Point Rock.
Westernville	Charles D. Parsell	Westernville.
Willow Grove	Daniel V. Fuller	Trenton.
Willow Valley	John Burrows	Alder Creek.

Onondaga County.

NAME OF FACTORY.	Applicant.	Post-office.
Barneskey	G. W. Barneskey	Lysander.
Block	E. M. Sharp	Fabius.
Brewerton Butter and Cheese Company	Charles Moulton	Brewerton.
Clay Center	F. M. Burlis	Euclid.
Cuyler	M. S. Allen	Delphi.
Delphi	M. S. Allen	Delphi.
East Fabius	M. S. Allen	Delphi.
Grange	H. W. Baker	North Syracuse.
Keeney Settlement	M. S. Allen	Delphi.
Pompey Centre	Moore, Southard & Co	Pompey.
Pompey Hollow	Charles Hunt	Delphi.
The Cato	George A. Hopkins	Jordan.
Union	H. C. Dulton	Delphi.
Van Bramer	L. M. Clement	Cicero.

Oswego County.

NAME OF FACTORY.	Applicant.	Post-office.
Albion Center	Henry Thorp	Sand Bank.
Amboy Centre	Robert Foiles	Amboy Centre.
Battle Island	A. S. Hinckley	Fulton.
Black Creek	A. Whittmore	Lansing.
Bowen's Corners	G. D. Trimble	Palermo.
Carleton	H. M. Carleton	Sand Bank.
Castor	George L. Castor	Pulaski.
Central Square	B. B. Waterbery	Central Square.

Cold Spring	Wm. Samson	Richland.
Demster	Willard E. Gilson	Demster.
Dewey, C. G	C. G. Dewey	Mexico.
Dugway	J. Doney	Dugway.
Eagle	A. H. Snell	Butterfly.
East Scriba	H. E. Middleton	Scriba.
Empire	G. B. Cusack	Clifford.
Farmers	Ira S. Hosford	Mexico.
Finster, I. E.	I. E. Finster	Lacona.
Gilbert Mills	C. F. Barnesky	Pennellville.
Granby Centre	W. E. Cusack	Cranby Centre.
Hannibal	E. B. Tucker	Hannibal.
Hess	Phillip Hess	West Amboy.
Hilton	Fred. Hilton	Orwell.
Hinmansville	C. H. Burlis	Hinmansville.
Howardville	Chas. B. Burch	Howardville.
Le Clair	F. P. LeClair	Lacona.
Little Valley	Meritt A. Jayner	Greenborough.
Loomis	W. W. Loomis	Ingalls Crossing.
Loomis	Allen Stevens	Orwell.
May Flower	Horatio E. Potter	West Monroe.
May Flower	Andrew Ott	Redfield.
Mexico Union	Chas. R. Haggerty	Mexico.
McKinney, A. C	A. C. McKinney	Orwell.
Mill Brook	Fred. Stark	North Hannibal.
Molino	O. D. Hunt	Orwell.
Mt. Pleasant	I. L. Hale	Mt. Pleasant.
Mowry	E. E. Mowry	Daysville.
New Haven	Robert H. Baker	Mexico.

OSWEGO COUNTY — (*Concluded*).

NAME OF FACTORY.	Applicant.	Post-office.
North Constantia	Daniel H. Tuttle	North Constantia.
North Road	F. H. Backus	Scriba.
North Scriba	Chas. A. Donway	North Scriba.
North Williamstown	D. E. West	Ricard.
North Victory	E. B. Tucker	Hannibal.
Olmstead, A. E	A. E. Olmstead	Orwell.
Palermo	C. V. Trimble	Palermo.
Parish Cheese Company	Pickens & Edick	Parish.
Pennellville	C. F. Barnaskey	Pennellville.
Phœnix	A. P. Merriam	Phœnix.
Pulaski	W. C. Holmes	Pulaski.
Rowsams Springs	Chas. M. Henry	Martinsburgh.
Salisbury	Brayton Salisbury	Pulaski.
South Gramby	G. D. Trimble	Palermo.
South Hannibal	G. D. Trimble	Palermo
South Richland	J. J. Miller	South Richland.
Stone Quarry	John Pifer	Arthur.
Star	Harry W. Bolles	Redfield.
Union Square	John F. Hartson	Union Square.
Volney Centre	John L. Gilmore	Volney.
West Monroe Star	William Multer	West Monroe.
White Clover	Peter Burlis	East Palermo.
Wilcox	Milo Wilcox	Oswego Falls.
Williamstown	A. I. Oram	Williamstown.
Woods, G. A	Albert White	Daysville.

OTSEGO COUNTY.

Brockway No. 1	H. C. Brockway	Richfield.
Browns, Wm. L.	Wm. L. Browns	Unadilla Forks.
Dimock Hollow	Gilbert & Root	Gilbertsville.
German	August Aufmuth	Fly Creek.
Gilbertsville	Gilbert & Root	Gilbertsville.
Gilsons	Gilbert & Root	Gilbertsville.
Gregory, S. C.	Gilbert & Root	Gilbertsville.
Hartwick Seminary	Gilbert & Root	Gilbertsville.
Heiman Hollow	Gilbert & Root	Gilbertsville.
Lambs, E. D.	E. D. Lamb	Unadilla Forks.
Laurens	Gilbert & Root	Gilbertsville.
Lloydsville	H. J. Wing	Unadilla Forks.
Maryland	Gilbert & Root	Gilbertsville.
Masons	Gilbert & Root	Gilbertsville.
Morris	Gilbert & Root	Gilbertsville.
Pattin	Fred B. Rainey	Burlington.
Roots	Gilbert & Root	Gilbertsville.
South Hartwick	Gilbert & Root	Gilbertsville.
Talbot, Floyd B.	Floyd B. Talbot	West Exeter.
Westford	C. E. McRorie	Westford.
Wileytown	L. P. Young	Oaksville.
"XX"	M. D. Caster	Garrattsville.
Young, Fred L.	Fred L. Young	Oaksville.

ST. LAWRENCE COUNTY.

Brees	Hall & Kenney	Gouverneur.
Centennial	Samuel Erving	Lisbon.
Cowpath	Isaac Baird	DeKalb Junction.

ST. LAWRENCE COUNTY — (*Concluded*).

NAME OF FACTORY.	Applicant.	Post-office.
East Gouverneur	Willis Ackerman	Gouverneur.
Elm Grove	Pickard & Baker	Hermon.
Hammond	J. S. More	Hammond.
Maple Grove	Charles A. Moore	Potsdam.
North Hammond	F. H. Fitch	North Hammond.
No. 33	W. W. Hall	Gouverneur.
Rock Bottom	A. J. McCoy	Depeyster.
Scotch Settlement	C. J. Shoulett	Rossie.
Settlement	William E. Brainerd	Canton.
Sommerville	James W. Marshall	Sommerville.
South Potsdam	B. F. Learned	Potsdam.
Sprague	F. W. Sprague	Hailesborough.
West Hermon	J. V. Newell	Hermon.
West Potsdam	William H. Lewis	West Potsdam.

SCHENECTADY COUNTY.

Princeton Dairy Association	B. F. Bradshaw	Rynex's Corners.

STEUBEN COUNTY.

Call Hill	D. A. Oaks	Purdy Creek.
Greenwood	George N. Stephens	Greenwood.
Greenwood Village	O. D. Stephens	Greenwood.
Mason, C. W	C. W. Mason	Bath.
Neil's Creek	I. F. Barnes	Neil's Creek.

Purdy Creek	James M. Powell	Purdy Creek.
Rexville	T. A. McCormick	Rexville.
Stephens	O. D. Stephens	Greenwood.
Troupsburgh	James McKinley	Troupsburgh.
West Union	L. A. Barney	West Union.
Wileysville	W. H. Scoville	Wileysville.

TOMPKINS COUNTY.

Lafayette	F. A. Begent	McLean.
Caroline	R. G. H. Speed	Slaterville.
McLean	F. E. & W. J. Perry	McLean.

WASHINGTON COUNTY.

Salem	Jas. M. Thompson	Salem.

WAYNE COUNTY.

Red Creek	George Rose	Red Creek.

WYOMING COUNTY.

Bliss	J. O. Milks	Bliss.
Campbell Hill	Edward Wolcott	Pike.
Castile	Charles L. Hess	Castile.
East Koy	C. H. Beveir	East Koy.
Empire	A. M. Thompson	Lamont.
Excelsior	L. F. Utley	Bliss.
Gainesville	B. F. Bristol, Jr	Gainesville.
Greene, E. A	Charles A. Green	Warsaw.
Griffis Corners	Olando Craft	Pike.

WYOMING COUNTY — (*Concluded*).

NAME OF FACTORY.	Applicant.	Post-office.
Hermitage	Peter B. Glor	Hermitage.
Silver Springs	N. Lamberson	Silver Spring.
Star No. 1	T. J. Hubbard	Weathersfield.
Star No. 2	T. J Hubbard	Weathersfield.
Star No. 3	T. J. Hubbard	Weathersfield.
Stearns	W. E. Stearns	Arcade.
Wing Street	R. O. Wood	Bliss.
Wyoming No. 1	Rollin R. Buck	Warsaw.

The future of cheese-making as well as that of co-operative butter-making demands co-operation on the part of the producers, that is, they should, as nearly as possible, each for himself, have his cows in the best possible condition for producing a good quality of milk, and feed them upon rations well tended toward that end. It is no wonder that results are so unsatisfactory when we consider the heterogeneous character of the feed and the cows.

UNIFORM MILK.

It is, in my judgment, impossible to produce milk containing nearly uniform ingredients from feeding materials which are very unlike in their constituents. I am more and more convinced that certain foods are calculated to produce certain results. There is no more important work for experimenters than to determine what foods will produce the best and most cheese and butter. Future profits and high standard rest upon this basis. I have made this a special line of instruction, because clearly of the opinion that poor food, food mixed at random and pastures filled with noxious weeds, are among the chief causes of the large portion of unsatisfactory products. Efforts have been made toward producing better milk; all complaints have been examined into, and aid extended everywhere it has been required, so far as our limited force would permit.

CO-OPERATION.

There is an increasing dissatisfaction among patrons of co-operative factories in regard to the comparative value of milk. Many farmers have not selected or tried their cows for the quality of their milk, but rather for the quantity given. This is one of the chief reasons why more milk is required to make a pound of cheese than formerly. Some farmers furnish their cows with better food than others will; lack of proper nourishment will cause the milk to contain less in solids. Such milk weighs, but it does not make as much cheese in proportion to its weight as milk from cows fed on nutritious foods.

TESTS FOR BUTTER FATS.

I do not know of any factory for making cheese where the milk is credited on the books of the factory according to its per cent of solids; the time is coming when this will be done; the progressive spirit which would lead dairymen up to this high order of things, would cause them to weed out poor or unpaying cows, which now comprise such a large part of the dairies of the State.

E. S. Munson of Franklin, N. Y., has conducted his butter factory during the past season on the basis of allowing each patron according to the amount of butter fats in his milk. The milk is tested frequently by Short's process — the per cent of fats are determined in this way.

I am informed that the plan worked well and gave satisfaction; it undoubtedly led to a profitable competition among the patrons; a stimulation of this kind all over the State would add largely to the income of the dairymen. It takes butter fat to make butter; it takes suitable food to produce this fat, the per cent of butter fat in milk gives it its value; that is to say, the amount of butter fat in milk is the best known practical standard for determining its quality. It may seem strange to fix the value of milk for cheese-making by its butter fat; it is, nevertheless, possible and, at least, an improvement upon the old plan. The cheese experts have worked on the line of keeping as much of the butter fats in the cheese as possible, as they make the cheese richer and add to its digestibility. The melting of the fats in the stomach makes the other part of the cheese easier of digestion and assimilation.

BUTTER-MAKING.

There is no doubt that one of the chief causes of poor butter is the lack of favorable condition in its manufacture. This is always more or less the case; with many dairymen the difficulties were much increased when the warm weather of the present season set in. Many butter-makers think they are dependent on ice in their work to the extent that it is almost impossible to get along without it.

As is well known, very few were able to secure their ice supply last winter; the prospects were that it would be a losing business to attempt to make butter. And many, who could, disposed of their milk at cheese factories thereby increasing the quantity of cheese.

DILUTION.

Fortunately in this dilemma, our experts availed themselves of the knowledge brought out in a former report (Fourth Annual Report, 1888) of this department that by diluting the milk with the coldest water obtainable the cream would raise more promptly and generally before the milk became sour, after which no cream can raise. This idea, being new as applied to butter-making, was taught at all the dairy meetings and demonstrations of its workings were given before the people. In very warm weather the milk was diluted one-half, that is to say, as much water was added as there was milk, care being taken that the vessel should not be full.

Where it was possible, cold water was also put about the milk cans; as fast as it became warm it was drawn off and cold water put in its place. A stream of cold water running about the can is better. A cool place was sought for in which to set the milk; by this means it could usually be kept from souring for twenty-four hours, during which period the greater part of the cream would rise to the surface. Without dilution, the milk, in many cases, would have soured in a few hours and become coagulated. Thousands of farmers were benefited in this way and saved thereby from great loss in the handling of their milk. This method of handling the milk was not recommended as the best, but as a temporary expedient which would save loss. A large number of dairymen have expressed their appreciation of this knowledge; experts also recommended the feeding of animals three or four times a day when fed on the diluted milk, dividing the actual amount of milk in this way, so as to secure to them the same amount of nutriment that they might have had before the milk was diluted.

COLD SETTING.

There is no doubt that the best results can be had in setting milk by the use of creameries and cold or ice water. It has been a disputed question, ever since this method for raising cream was devised, whether the butter made from it would keep as long as that made from cream not thus raised. From experiments made by this department, through its experts, it is believed that butter will keep just as well made from cream raised in this manner as from cream raised in any other way, provided the temperature is not reduced too low and the cream is properly handled. In many instances the temperature of the milk is reduced below forty-five and often below forty degrees. When it is run down to forty degrees or below, a considerable amount of caseine is thrown up with the cream and finds its way, ultimately, into the butter. Such butter will keep from a rancid taint but a short time — only a few days. With less caseine the keeping qualities are lengthened; with none at all, butter well packed will keep as well as when the cream is raised by an open pan process. Of late more attention has been given to securing the cream with hand separators and so far as we have become acquainted with its workings it seems to be growing in favor. The temperature should not go below forty-five degrees. With this statement, of course, is involved the fact that the cream from the cold setting must be ripened or matured the same as the cream from the open setting. I do not mean by this, in the same way, but to the same degree or character. These facts are set forth by our experts and are being adopted by butter-makers who desire to have better and longer-keeping butter.

HANDLING CREAM.

Valuable instructions have been given in the handling of cream, not to allow it to get too old and the importance of skimming while the milk and cream are still sweet. Milk loses in food value by getting acid, and cream left on the pan of sour milk rapidly gets off flavor. Dairymen have been taught that one can of bad milk and cream will spoil a churning, and one churning of tainted butter will spoil a whole tub. The causes of taint in milk, cream and butter have been explained and what should be done and what should not be done to avoid deleterious causes and effect.

Bitterness in Cream and Butter.

When milk or cream are held too long, although it may be in a cold temperature in which the ordinary acidity may not be developed, a bitter taste is often developed which is imparted in butter and destroys its value. It is the opinion of our experts that this bitterness is another form of putrefactive ferment, which is peculiar to a cold temperature not active or marked as the acidulous ferment but more insidious and sure to manifest itself more or less rankly according to the conditions. The remedy is never to hold the milk for the cream to rise longer than twenty-four hours, and the cream not longer than thirty-six hours.

Under specially favorable conditions and surroundings the time may, possibly, be extended. It is not, however, a safe rule to insure sweet and good butter; the earlier churning and skimming are recommended. If the conditions for butter-making will not admit of these safe rules being applied, the conditions should be made to conform to them. No dairyman can afford to deliberately make poor butter.

Raising Cream in Winter.

The practice of diluting milk with warm water in winter, when not sufficiently warm, has been advocated in our work. Milk in winter is nearly always viscid or sticky, and because of the reduction of the amount of water in proportion to the solids in the milk, especially so as the time of parturition approaches, by adding fifteen to twenty per cent of warm water to milk, when set for cream, more cream will rise and the creaming will take place in less time. The temperature of the milk, when set for cream, should be raised to nearly 100° in the winter. When this is done, milk may be set in a cool room, so that the cream will rise before any change to acidity or the bitter principle. Using a creamery is a surer method, as the conditions can be better regulated.

DETAILED STATEMENT *of the commissioner, assistant commissioners, experts, agents, chemists and counsel, appointed and employed during the year, together with their compensation, expenses and disbursements for the fiscal year ending September* 30, 1890.

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
George L. Flanders	Assistant commissioner	October 1, 1889	....	$32 74
James H Brown	Expert and agent	" 9, 1889	$100 00	41 57
Thomas R. Gray	Expert and agent	" 9, 1889	100 00	78 67
F. D. Tuthill	Assistant commissioner	" 9, 1889	150 00	49 14
Peter Drexelius	Assistant commissioner	" 9, 1889	166 67	33 50
John J. Coughlin	Expert and agent	" 9, 1889	100 00	23 78
R. D. Clark	Chemist	" 9, 1889	....	21 22
William Smith	Laborer	" 9, 1889	30 00	....
E. S. Wilson	Expert and agent	" 9, 1889	100 00	79 34
E. G. Love	Chemist	" 9, 1889	18 75	....
W. G. Spence	Expert and agent	" 9, 1889	90 00	43 90
John Gardinier	Expert and agent	" 9, 1889	75 00	33 16
Charles Sears	Expert and agent	" 9, 1889	80 00	88 20
John E. Cady	Expert and agent	" 9, 1889	75 00	95 47
Samuel Abrams	Expert and agent	" 9, 1889	100 00	22 29
Arch. D. Clark	Expert and agent	" 9, 1889	100 00	51 44
C. S. Kellogg	Expert and agent	" 9, 1889	78 00	79 25
Michael Galligan	Expert and agent	" 9, 1889	75 00	18 77
W. J. Corbett	Expert and agent	" 9, 1889	80 00	11 57
Arthur C. Salmon	Attorney	" 9, 1889	100 00	....
W. W. Meeteer	Expert and agent	" 9, 1889	100 00	63 25
J. R. Wheeler	Expert and agent	" 9, 1889	80 00	91 66

T. C. Dubois	Expert and agent	"	9, 1889	100 00	63 58
O. C. Griffis	Expert and agent	"	9, 1889	80 00	74 23
George W. Price	Expert and agent	"	9, 1889	80 00	70 01
B. F. Van Valkenburgh	Assistant commissioner	"	9, 1889	208 33	187 59
A. T. Ney	Assistant commissioner	"	10, 1889	100 00	35 27
John H. Foley	Agent	"	10, 1889	100 00	5 26
Joseph F. Geisler	Chemist	"	10, 1889	56 00	63
M. A. Perry	Assistant commissioner	"	10, 1889	166 66	110 62
Frank Elliott	Expert and agent	"	10, 1889	75 00	74 40
Thomas B. Loughlin	Expert and agent	"	10, 1889	60 00	64 90
Charles A. Perry	Expert and agent	"	10, 1889	75 00	31 68
Patrick J. Sutley	Assistant commissioner	"	10, 1889	150 00	40 99
Samuel A. Lattimore	Chemist	"	18, 1889	110 00	....
Samuel A. Lattimore	Chemist	"	18, 1889	130 00	....
James W. Mulcay	Expert and agent	"	18, 1889	80 00	40 53
James W. Walsh	Expert and agent	"	18, 1889	80 00	64 05
Wilfred H. Sage	Chemist	"	18, 1889	100 00	1 84
Udelpho V. Sage	Expert and agent	"	18, 1889	75 00	16 25
James A. Story	Expert and agent	"	18, 1889	63 00	60 60
William T. Peasley	Expert	"	18, 1889	9 00	4 50
Charles J. Morganstern	Expert	"	18, 1889	80 00	33 79
Thomas L. Quigley	Expert	"	18, 1889	100 00	16 40
George Bernhard	Expert	"	18, 1889	100 00	8 28
William F. Mackey	Attorney	"	18, 1889	60 00	....
Joseph F. Geisler	Chemist	"	18, 1889	28 63	85
Thomas Byrnes	Expert and agent	"	23, 1889	55 00	59 94
F. P. Vandenbergh	Chemist	"	23, 1889	25 00	....
George L. Flanders	Assistant commissioner	"	23, 1889	....	100 00
Simon Nussbaum	Expert and agent	"	26, 1889	100 00	20 10
George B. Fellows	Expert and agent	"	30, 1889	100 00	....
R. D. Clark	Chemist	"	30, 1889	166 66	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.		Compensation.	Expenses.
George L. Flanders	Assistant commissioner	October	30, 1889	$166 66	
J. K. Brown	Commissioner	"	30, 1889	250 00	
William P. Cutler	Chemist	"	30, 1889	5 00	$1 00
Edward B. Thomas	Attorney	November	1, 1889	150 00	1 00
William Smith	Laborer	"	1, 1889	30 00	
James E. Ryan	Expert and agent	"	2, 1889	100 00	77 12
R. D. Clark	Chemist	"	8, 1889		4 72
F. D. Vandenburgh	Chemist	"	8, 1889	15 00	
Charles B. Olendorf	Chemist	"	8, 1889	85 00	
B. F. Van Valkenburgh	Assistant commissioner	"	8, 1889	208 33	87 72
W. W. Meeteer	Expert and agent	"	8, 1889	100 00	52 24
Peter Drexelius	Assistant commissioner	"	8, 1889	166 67	33 12
F. D. Tuthill	Assistant commissioner	"	8, 1889	150 00	46 04
A. T. Ney	Assistant commissioner	"	8, 1889	100 00	13 65
LeRoy S. Gove	Chemist	"	8, 1889	130 00	
Joseph F. Geisler	Chemist	"	8, 1889	112 00	1 00
Joseph F. Geisler	Chemist	"	8, 1889	84 93	1 63
Stillwell & Gladding	Chemists	"	8, 1889	68 00	4 00
Stillwell & Gladding	Chemists	"	8, 1889	29 75	1 10
Archibald D. Clark	Expert and agent	"	11, 1889	100 00	40 45
W. G. Spence	Expert and agent	"	11, 1889	81 00	34 96
W. J. Corbett	Expert and agent	"	11, 1889	80 00	10 05
James A. Story	Expert and agent	"	11, 1889	60 00	58 48
Frank Elliott	Expert and agent	"	11, 1889	75 00	69 68
John J. Coughlin	Expert and agent	"	11, 1889	100 00	18 25
Michael Galligan	Expert and agent	"	11, 1889	75 00	21 00

Samuel Abrams	Expert and agent	"	11, 1889	100 00	28 89
John E. Cady	Expert and agent	"	11, 1889	75 00	95 62
J. H. Brown	Expert and agent	"	11, 1889	100 00	14 56
T. C. DuBois	Expert and agent	"	11, 1889	100 00	86 26
Charles Sears	Expert and agent	"	11, 1889	80 00	94 65
E. S. Wilson	Expert and agent	"	11, 1889	100 00	62 24
Charles S. Kellogg	Expert and agent	"	11, 1889	78 00	80 16
Thomas R. Gray	Expert and agent	"	11, 1889	100 00	62 82
John Gardinier	Expert and agent	"	11, 1889	75 00	22 05
J. K. Brown	Commissioner	"	11, 1889	....	19 25
McNaughton & Taylor	Attorneys	"	11, 1889	145 00	90
M. B. Jewell	Attorney	"	11, 1889	60 00	....
O. C. Griffis	Expert and agent	"	11, 1889	60 00	62 51
Jeremiah Clark	Expert and agent	"	11, 1889	33 00	2 05
P. J. Sutley	Assistant commissioner	"	11, 1889	150 00	76 99
M. A. Perry	Assistant commissioner	"	12, 1889	166 67	121 52
George L. Flanders	Assistant commissioner	"	19, 1889	....	48 15
John H. Foley	Expert and agent	"	19, 1889	100 00	2 00
James A. Ward	Attorney	"	19, 1889	15 00	....
George W. Price	Expert and agent	"	19, 1889	80 00	64 95
George Bernhard	Expert and agent	"	19, 1889	100 00	40
Thomas L. Quigley	Expert and agent	"	19, 1889	100 00	19 40
Theodore Deecke	Chemist	"	19, 1889	10 00	....
Charles J. Morganstern	Expert and agent	"	21, 1889	80 00	37 02
Wilfred H. Sage	Chemist	"	22, 1889	100 00	....
Samuel Lattimore	Chemist	"	25, 1889	130 00	....
Jeremiah Clark	Expert and agent	"	25, 1889	12 00	30
Simon Nussbaum	Expert and agent	"	29, 1889	100 00	18 03
James W. Walsh	Expert and agent	"	30, 1889	80 00	49 16
James W. Mulcay	Expert and agent	"	30, 1889	80 00	35 32
J. K. Brown	Commissioner	December	2, 1889	250 00	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position hold.	Date of check.	Compensation.	Expenses.
George L. Flanders	Assistant commissioner	December 2, 1889	$166 66	....
George B. Fellows	Expert and agent	" 2, 1889	100 00	....
R. D. Clark	Chemist	" 2, 1889	166 66	....
J. H. Brown	Expert and agent	" 2, 1889	100 00	$13 96
James E. Ryan	Expert and agent	" 5, 1889	100 00	46 88
Peter Drexelius	Assistant commissioner	" 5, 1889	166 67	37 49
John J. Coughlin	Expert and agent	" 5, 1889	100 00	22 59
W. J. Corbett	Expert and agent	" 5, 1889	80 00	7 69
A. A. Van Dusen	Attorney	" 5, 1889	25 00	2 50
Samuel Abrams	Expert and agent	" 5, 1889	100 00	15 19
William F. Mackey	Attorney	" 5, 1889	150 00	....
Michael Galligan	Expert and agent	" 5, 1889	75 00	21 77
John E. Cady	Expert and agent	" 9, 1889	75 00	84 64
P. J. Sutley	Assistant commissioner	" 9, 1889	150 00	59 57
Charles S. Kellogg	Expert and agent	" 9, 1889	75 00	63 03
W. H. Wyker	Attorney	" 9, 1889	10 00	....
Thomas R. Gray	Expert and agent	" 9, 1889	100 00	59 80
John Gardinier	Expert and agent	" 9, 1889	75 00	22 82
George W. Price	Expert and agent	" 9, 1889	80 00	66 94
G. M. Thompson	Typewriter	" 9, 1889	24 00	....
T. C. DuBois	Expert and agent	" 9, 1889	100 00	71 45
W. W. Meeteer	Expert and agent	" 9, 1889	100 00	46 86
A. T. Ney	Assistant commissioner	" 9, 1889	100 00	11 25
E. S. Wilson	Expert and agent	" 9, 1889	100 00	54 84
Arch. D. Clark	Expert and agent	" 9, 1889	100 00	39 25
O. C. Griffis	Expert and agent	" 9, 1889	80 00	72 10

W. G. Spence	Expert and agent	"	9, 1889	78 00	19 02
Charles Sears	Expert and agent	"	9, 1889	80 00	84 93
A. C. Salmon	Attorney	"	9, 1889	120 00	9 49
William Smith	Laborer	"	9, 1889	30 00	....
B. F. Van Valkenburgh	Assistant commissioner	"	9, 1889	208 53	123 79
R. D. Clark	Chemist	"	9, 1889	....	2 37
Joseph F. Geisler	Chemist	"	10, 1889	31 25	1 65
Joseph F. Geisler	Chemist	"	10, 1889	16 00	13
James A. Story	Expert and agent	"	10, 1889	75 00	53 25
U. V. Sage	Expert and agent	"	10, 1889	75 00	20 35
Frank Elliott	Expert and agent	"	10, 1889	75 00	58 88
Thomas Byrnes	Expert and agent	"	16, 1889	75 00	71 11
William F. Mackey	Attorney	"	16, 1889	120 00	....
Marcus A. Perry	Assistant commissioner	"	16, 1889	166 67	100 98
Jeremiah Clark	Expert and agent	"	16, 1889	21 00	13 50
McNaughton & Taylor	Attorneys	"	16, 1889	20 00	1 65
S. A. Lattimore	Chemist	"	16, 1889	115 00	....
Wilfred H. Sage	Chemist	"	16, 1889	100 00	....
Thomas L. Quigley	Expert and agent	"	16, 1889	100 00	10 17
Stillwell & Gladding	Chemists	"	16, 1889	114 75	3 90
John Wiley	Expert and agent	"	16, 1889	75 00	12 29
James G. McMahon	Agent	"	16, 1889	75 00	15 75
James Mulcay	Expert and agent	"	16, 1889	80 00	18 64
James W. Walsh	Expert and agent	"	16, 1889	80 00	19 05
George Bernhard	Expert and agent	"	16, 1889	100 00	9 14
Charles J. Morganstern	Expert and agent	"	16, 1889	80 00	23 46
T. D. Tuthill	Assistant dairy commissioner	"	16, 1889	150 00	69 06
Edward B. Palmer	Expert	"	18, 1889	15 00	50
George H. Palmer	Expert and agent	"	18, 1889	30 00	40
F. P. Vandenbergh	Chemist	"	18, 1889	15 00	....
F. P. Vandenbergh	Chemist	"	18, 1889	40 00	12 59

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
Josiah K. Brown	Commissioner	December 18, 1889	....	$60 36
George L. Flanders	Assistant commissioner	" 19, 1889	....	40 72
William N. Thomas	Stenographer	" 21, 1889	$30 00	....
Simon Nussbaum	Expert and agent	" 23, 1889	100 00	5 60
Thomas B. Laughlin	Expert and agent	" 23, 1889	60 00	39 60
George L. Flanders	Assistant commissioner	" 24, 1889	166 68	....
George B. Fellows	Expert and agent	" 24, 1889	100 00	....
J. K. Brown	Commissioner	" 24, 1889	250 00	....
R. D. Clark	Chemist	24, 1889	166 68	....
John H. Foley	Expert and agent	" 28, 1889	100 00	2 00
G. M. Thompson	Typewriter	January 2, 1890	37 50	....
William Smith	Laborer	" 2, 1890	30 00	....
R. D. Clark	Chemist	" 2, 1890	....	9 95
Charles Sears	Expert and agent	" 3, 1890	80 00	81 49
Almon T. Ney	Assistant commissioner	" 3, 1890	100 00	13 25
Charles S. Kellogg	Expert and agent	" 3, 1890	75 00	38 11
James H. Brown	Expert and agent	" 3, 1890	100 00	13 81
F. P. Vandenbergh	Chemist	" 3, 1890	10 00	....
F. D. Tuthill	Assistant commissioner	" 6, 1890	150 00	67 16
P. J. Sutley	Assistant commissioner	" 6, 1890	166 66	92 06
D. H. Turner	Special agent	" 6, 1890	45 00	....
E. S. Wilson	Expert and agent	" 14, 1890	100 00	55 05
Thomas R. Gray	Expert and agent	" 14, 1890	100 00	105 14
W. W. Meeteer	Expert and agent	" 14, 1890	100 00	82 81
Archibald D. Clark	Expert and agent	" 14, 1890	100 00	93 58
Russell W. Moore	Chemist	" 14, 1890	40 00	....

W. J. Corbett	Expert and agent	"	14, 1890	80 00	1 55
John J. Coughlin	Expert and agent	"	14, 1890	100 00	8 15
Samuel Abrams	Expert and agent	"	14, 1890	100 00	18 51
Peter Drexelius	Assistant commissioner	"	14, 1890	166 67	47 15
Michael Galligan	Expert and agent	"	14, 1890	75 00	13 25
John E. Cady	Expert and agent	"	14, 1890	75 00	90 62
John Gardinier	Expert and agent	"	14, 1890	75 00	17 80
E. G. Love	Chemist	"	14, 1890	41 25	....
W. G. Spence	Expert and agent	"	14, 1890	78 00	17 59
T. C. Du Bois	Expert and agent	"	14, 1890	100 00	89 55
O. C. Griffis	Expert and agent	"	14, 1890	80 00	84 18
M. A. Perry	Assistant commissioner	"	14, 1890	166 66	93 90
U. V. Sage	Expert and agent	"	14, 1890	75 00	41 89
Frank Elliott	Expert and agent	"	14, 1890	75 00	25 84
James A. Story	Expert and agent	"	14, 1890	75 00	34 23
George W. Price	Expert and agent	"	14, 1890	80 00	66 45
James W. Mulcay	Expert and agent	"	14, 1890	80 00	3 23
Thomas L. Quigley	Expert and agent	"	14, 1890	100 00	10 82
Charles J. Morganstern	Expert and agent	"	14, 1890	80 00	30 59
Samuel A. Lattimore	Chemist	"	14, 1890	100 00	....
George Bernhard	Expert and agent	"	14, 1890	100 00	17 42
James G. Jolley	Expert	"	14, 1890	75 00	5 08
James E. Ryan	Expert and agent	"	14, 1890	100 00	26 15
Benjamin W. Downing	Attorney	"	14, 1890	90 00	....
B. F. Van Valkenburgh	Assistant commissioner	"	14, 1890	208 33	62 99
George L. Flanders	Assistant commissioner	"	14, 1890	... .	99 72
James W. Walsh	Expert and agent	"	22, 1890	80 00	41 82
Wilfred H. Sage	Chemist	"	22, 1890	100 00	....
J. K. Brown	Commissioner	"	23, 1890	....	68 19
W. B. Handbidge	Chemist	"	28, 1890	5 00	....
E. G. Love	Chemist	"	28, 1890	272 00	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.		Compensation.	Expenses.
Stillwell & Gladding	Chemists	January	28, 1890	$264 00	....
Stillwell & Gladding	Chemists	"	28, 1890	146 00	$1 00
E. G. Love	Chemist	"	28, 1890	108 00	....
John H. Foley	Expert and agent	"	28, 1890	100 00	1 50
Joseph F. Geisler	Chemist	"	30, 1890	320 00	1 25
Joseph F. Geisler	Chemist	"	30, 1890	129 00	25
E. Waller	Chemist	"	30, 1890	175 00	....
Simon Nussbaum	Expert and agent	"	30, 1890	66 67	13 60
J. K. Brown	Commissioner	February	1, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	1, 1890	166 66	....
George B. Fellows	Expert and agent	"	1, 1890	100 00	....
R. D. Clark	Chemist	"	1, 1890	166 66	....
J. K. Brown	Commissioner	"	12, 1890	....	21 33
W. J. Corbett	Expert and agent	"	12, 1890	80 00	4 33
Peter Drexelius	Assistant commissioner	"	12, 1890	166 67	34 63
Michael Galligan	Expert and agent	"	12, 1890	75 00	16 85
Charles S. Kellogg	Expert and agent	"	12, 1890	72 00	55 84
James H. Brown	Expert and agent	"	12, 1890	100 00	14 69
W. G. Spence	Expert and agent	"	12, 1890	48 00	1 68
George L. Flanders	Assistant commissioner	"	12, 1890	....	43 96
O. C. Griffis	Expert and agent	"	13, 1890	80 00	79 99
Samuel Abrams	Expert and agent	"	13, 1890	100 00	15 77
John J. Coughlin	Expert and agent	"	13, 1890	100 00	26 52
John C. Uhlein	Stenographer	"	13, 1890	10 00	....
P. J. Sutley	Assistant commissioner	"	13, 1890	166 67	52 43
George W. Price	Expert and agent	"	13, 1890	80 00	64 63

F. D. Tuthill	Assistant commissioner	"	13, 1890	150 00	32 43
James A. Ward	Attorney	"	13, 1890	125 00	1 90
John Gardinier	Expert and agent	"	13, 1890	75 00	26 90
B. F. Van Valkenburgh	Assistant commissioner	"	13, 1890	208 34	26 08
J. J. Sorogan	Expert and agent	"	13, 1890	100 00	67 18
E. S. Wilson	Expert and agent	"	13, 1890	100 00	62 70
A. C. Salmon	Attorney	"	13, 1890	55 00	2 99
James E. Ryan	Expert and agent	"	13, 1890	100 00	18 77
William Smith	Laborer	"	13, 1890	23 07	....
John E. Cady	Expert and agent	"	13, 1890	75 00	98 42
H. N. Hill	Chemist	"	13, 1890	81 00	11 36
Charles Sears	Expert and agent	"	13, 1890	80 00	76 11
Archibald D. Clark	Expert and agent	"	13, 1890	100 00	43 30
William W. Meeteer	Expert and agent	"	13, 1890	100 00	80 31
T. C. DuBois	Expert and agent	"	13, 1890	100 00	77 57
R. D. Clark	Chemist	"	13, 1890	....	7 83
Charles H. Van Loon	Laborer	"	13, 1890	6 92	....
Joseph F. Geisler	Chemist	"	13, 1890	104 00	25
Joseph F. Geisler	Chemist	"	13, 1890	72 75	50
F. P. Vandenburgh	Chemist	"	13, 1890	100 00	....
E. G. Love	Chemist	"	13, 1890	66 75	1 25
Stillwell & Gladding	Chemist	"	13, 1890	23 50	50
James W. Mulcay	Expert and agent	"	14, 1890	80 00	6 82
James W. Walsh	Expert and agent	"	14, 1890	80 00	42 15
Charles J. Morganstern	Expert and agent	"	14, 1890	80 00	29 91
Samuel A. Lattimore	Chemist	"	14, 1890	100 00	....
George Bernhard	Expert and agent	"	14, 1890	100 00	2 63
Thomas L. Quigley	Expert and agent	"	14, 1890	100 00	6 28
Wilfred H. Sage	Chemist	"	14, 1890	100 00	....
Thomas R. Gray	Expert and agent	"	15, 1890	100 00	60 63
M. A. Perry	Assistant commissioner	"	18, 1890	166 67	104 16

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
David W. Barry	Expert	February 18, 1890	$40 00	....
Frank Elliott	Expert and agent	" 18, 1890	75 00	$16 73
James A. Story	Expert and agent	" 18, 1890	75 00	27 55
Charles A. Perry	Expert and agent	" 18, 1890	75 00	2 94
Udelpho V. Sage	Expert and agent	" 18, 1890	75 00	38 08
John H. Foley	Expert and agent	" 18, 1890	100 00	2 00
Simon Nussbaum	Expert and agent	" 27, 1890	100 00	19 55
J. K. Brown	Commissioner	March 1, 1890	250 00	....
George L. Flanders	Assistant commissioner	" 1, 1890	166 66	....
George B. Fellows	Expert and agent	" 1, 1890	100 00	....
R. D. Clark	Chemist	" 1, 1890	166 66	....
James E. Ryan	Expert and agent	" 4, 1890	100 00	39 44
William F. Mackey	Attorney	" 5, 1890	120 00	....
Peter Drexelius	Assistant commissioner	" 5, 1890	166 67	27 46
John J. Coughlin	Expert and agent	" 5, 1890	100 00	10 23
E. S. Wilson	Expert and agent	" 5, 1890	100 00	51 26
Thomas R. Gray	Expert and agent	" 5, 1890	100 00	50 36
Arthur C. Salmon	Attorney	" 5, 1890	55 00	....
Samuel Abrams	Expert and agent	" 5, 1890	100 00	15 66
Michael Galligan	Expert and agent	" 5, 1890	75 00	13 54
J. J Sorogan	Expert and agent	" 5, 1890	100 00	61 92
Archibald D. Clark	Expert and agent	" 5, 1890	100 00	21 20
James H. Brown	Expert and agent	" 5, 1890	100 00	3 21
Thornton A. Nevins	Attorney	" 5, 1890	60 00	....
Stillwell & Gladding	Chemists	" 5, 1890	16 25	25
F. P. Vandenburgh	Chemist	" 5, 1890	100 00	....

F. P. Vandenburgh	Chemist	"	5, 1890	60 00	....
E. G. Love	Chemist	"	5, 1890	86 25	2 00
Joseph F. Geisler	Chemist	"	5, 1890	56 75	63
Charles Sears	Expert and agent	"	5, 1890	80 00	82 52
Charles S. Kellogg	Expert and agent	"	5, 1890	72 00	59 75
John Gardinier	Expert and agent	"	5, 1890	75 00	52 52
R. D. Clark	Chemist	"	5, 1890	......	24 60
Charles H. Van Loon	Laborer	"	5, 1890	30 00	....
Charles D. Olendorf	Attorney	"	5, 1890	90 00	....
F. D. Tuthill	Assistant commissioner	"	5, 1890	150 00	33 19
B. F. Van Valkenburgh	Assistant commissioner	"	7, 1890	208 33	23 85
W. W. Meeteer	Expert and agent	"	7, 1890	100 00	84 86
Josiah K. Brown	Commissioner	"	8, 1890	....	36 23
T. C. Du Bois	Expert and agent	"	8, 1890	100 00	70 22
George W. Price	Expert and agent	"	8, 1890	80 00	60 91
W. G. Spence	Expert and agent	"	8, 1890	45 00	7 02
Frank Elliott	Expert and agent	"	8, 1890	75 00	12 60
Charles A. Perry	Expert and agent	"	8, 1890	75 00	4 75
Udelpho V. Sage	Expert and agent	"	8, 1890	75 00	28 07
Patrick J. Sutley	Assistant commissioner	"	8, 1890	166 67	50 57
George H. Bernhard	Expert	"	8, 1890	100 00	3 15
Charles J. Morganstern	Expert and agent	"	8, 1890	80 00	23 52
James A. Story	Expert and agent	"	8, 1890	75 00	32 12
Marcus A. Perry	Assistant commissioner	"	8, 1890	166 67	71 05
James W. Walsh	Expert and agent	"	8, 1890	80 00	42 18
Samuel A. Lattimore	Chemist	"	8, 1890	100 00	....
James W. Mulcay	Expert and agent	"	8, 1890	80 00	4 40
John E. Cady	Expert and agent	"	8, 1890	75 00	80 32
O. C. Griffis	Expert and agent	"	8, 1890	80 00	59 59
George L. Flanders	Assistant commissioner	"	11, 1890	....	23 08
W. J. Corbett	Expert and agent	"	12, 1890	80 00	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.		Compensation.	Expenses.
Joseph F. Geisler	Chemist	March	12, 1890	$94 25	$7 16
John H. Foley	Expert and agent	"	12, 1890	100 00	2 00
George T. Powell	Agent	"	12, 1890	10 00	11 64
Wilfred H. Sage	Chemist	"	15, 1890	100 00	....
Thomas L. Quigley	Expert and agent	"	15, 1890	100 00	2 61
Mary H. Ney	Agent	"	15, 1890	75 00	....
Simon Nussbaum	Expert and agent	"	28, 1890	100 00	23 97
J. K. Brown	Commissioner	April	1, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	1, 1890	166 68	....
George B. Fellows	Expert and agent	"	1, 1890	100 00	....
R. D. Clark	Chemist	"	1, 1890	166 68	....
P. J. Sutley	Assistant commissioner	"	10, 1890	166 67	71 41
James E. Ryan	Expert and agent	"	11, 1890	100 00	49 94
Samuel Abrams	Expert and agent	"	11, 1890	100 00	10 47
W. F. Mackey	Attorney	"	11, 1890	60 00	3 75
John Gardinier	Expert and agent	"	11, 1890	75 00	49 43
W. G. Spence	Expert and agent	"	11, 1890	51 00	6 91
Charles Van Loon	Laborer	"	11, 1890	30 00	....
George W. Price	Expert and agent	"	11, 1890	80 00	58 87
F. D. Tuthill	Assistant commissioner	"	11, 1890	150 00	13 00
William W. Meeteer	Expert and agent	"	11, 1890	100 00	72 97
LeRoy S. Gove	Attorney	"	11, 1890	30 00	....
B. F. Van Valkenburgh	Assistant commissioner	"	11, 1890	208 33	33 30
J. J. Sorogan	Expert and agent	"	11, 1890	100 00	72 30
E. S. Wilson	Expert and agent	"	11, 1890	100 00	74 65
Archibald D. Clark	Expert and agent	"	11, 1890	100 00	42 25

Charles J. Morganstern	Expert and agent	"	11, 1890	80 00	23 94
O. C. Griffis	Expert and agent	"	11, 1890	80 00	60 84
Charles Sears	Expert and agent	"	11, 1890	80 00	79 05
James W. Mulcay	Expert and agent	"	11, 1890	80 00	2 15
U. V. Sage	Expert and agent	"	11, 1890	75 00	25 68
Frank Elliott	Expert and agent	"	11, 1890	75 00	18 12
M. A. Perry	Assistant commissioner	"	11, 1890	166 66	93 04
Thomas R. Gray	Expert and agent	"	11, 1890	100 00	75 85
George Bernhard	Expert and agent	"	11, 1890	100 00	9 01
McNaughton & Taylor	Attorneys	"	11, 1890	50 00	....
George L. Flanders	Assistant commissioner	"	11, 1890	....	42 70
T. C. DuBois	Expert and agent	"	11, 1890	100 00	67 20
Charles S. Kellogg	Expert and agent	"	11, 1890	78 00	67 61
Josiah K. Brown	Commissioner	"	12, 1890	....	47 93
James W. Walsh	Expert and agent	"	12, 1890	80 00	40 70
John J. Coughlin	Expert and agent	"	12, 1890	100 00	18 57
W. J. Corbett	Expert and agent	"	12, 1890	80 00	4 37
Thomas L. Quigley	Expert and agent	"	12, 1890	100 00	3 51
Michael Galligan	Expert and agent	"	12, 1890	75 00	16 02
Peter Drexelius	Assistant commissioner	"	12, 1890	166 67	15 51
John E. Cady	Expert and agent	"	12, 1890	75 00	92 88
John M. Gardner	Attorney	"	12, 1890	10 00	....
E. G. Love	Chemist	"	12, 1890	....	8 75
F. P. Vandenburgh	Chemist	"	12, 1890	100 00	3 75
Wilfred H. Sage	Chemist	"	12, 1890	100 00	....
Stillwell & Gladding	Chemists	"	12, 1890	30 00	50
Joseph F. Geisler	Chemist	"	12, 1890	16 25	....
Risley & Perry	Attorneys	"	18, 1890	115 00	11 70
James H. Brown	Expert and agent	"	18, 1890	100 00	2 82
Samuel A. Lattimore	Chemist	"	18, 1890	150 00	....
George L. Flanders	Assistant commissioner	"	18, 1890	....	100 00

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
H. & W. J. Welsh	Attorneys	April 18, 1890	$20 00	....
Joseph F. Geisler	Chemist	" 18, 1890	48 75	$11 25
John H. Foley	Expert and agent	" 18, 1890	100 00	2 70
Simon Nussbaum	Expert and agent	May 1, 1890	100 00	13 68
Josiah K. Brown	Commissioner	" 1, 1890	250 00	....
George L. Flanders	Assistant commissioner	" 1, 1890	166 66	....
George B. Fellows	Expert and agent	" 1, 1890	100 00	....
R. D. Clark	Chemist	" 1, 1890	166 66	....
Charles Van Loon	Laborer	" 14, 1890	30 00	....
Arthur C. Salmon	Attorney	" 15, 1890	85 00	....
E. S. Wilson	Expert and agent	" 15, 1890	100 00	70 57
William W. Meeteer	Expert and agent	" 15, 1890	100 00	98 83
Thomas E Gray	Expert and agent	" 15, 1890	100 00	62 97
Archibald D. Clark	Expert and agent	" 15, 1890	100 00	73 99
J. J. Sorogan	Expert and agent	" 15, 1890	100 00	65 88
B. F. Van Valkenburgh	Assistant commissioner	" 15, 1890	208 33	49 74
George W. Price	Expert and agent	" 15, 1890	80 00	80 88
O. C. Griffis	Expert and agent	" 15, 1890	80 00	85 54
James E Ryan	Expert and agent	" 15, 1890	100 00	51 68
W. H. Wyker	Attorney	" 15, 1890	10 00	....
Joseph F. Geisler	Chemist	" 15, 1890	146 05	6 95
Josiah K. Brown	Commissioner	" 15, 1890	....	28 97
Patrick J. Sutley	Assistant commissioner	" 15, 1890	166 67	71 50
Samuel A. Lattimore	Chemist	" 15, 1890	100 00	....
George Bernhard	Expert and agent	" 15, 1890	100 00	15 99
Wilfred H. Sage	Chemist	" 15, 1890	100 00	....

James W. Mulcay	Expert and agent	"	15, 1890	80 00	4 39
Charles J. Morganstern	Expert and agent	"	15, 1890	80 00	23 42
T. C. DuBois	Expert and agent	"	15, 1890	100 00	65 85
F. D. Tuthill	Assistant commissioner	"	15, 1890	150 00	29 44
Schlosser & Wood	Attorneys	"	15, 1890	30 00	1 10
R. D. Clerk	Chemist	"	15, 1890	....	3 17
Joseph F. Geisler	Chemist	"	15, 1890	19 00	75
F. D. Vandenburgh	Chemist	"	15, 1890	100 00	....
E. G. Love	Chemist	"	15, 1890	79 25	....
Stillwell & Gladding	Chemists	"	15, 1890	16 00	....
Charles S. Kellogg	Expert and agent	"	15, 1890	66 00	67 52
John Gardinier	Expert and agent	"	15, 1890	75 00	31 44
Charles Sears	Expert and agent	"	15, 1890	80 00	35 02
John E. Cady	Expert and agent	"	15, 1890	75 00	90 05
James H. Brown	Expert and agent	"	15, 1890	100 00	3 42
Michael Galligan	Expert and agent	"	15, 1890	75 00	15 75
John J. Coughlin	Expert and agent	"	15, 1890	100 00	8 25
W. J. Corbett	Expert and agent	"	15, 1890	80 00	5 00
Peter Drexelius	Assistant commissioner	"	15, 1890	166 67	20 69
Samuel Abrams	Expert and agent	"	15, 1890	100 00	10 97
C. D. Olendorf	Attorney	"	15, 1890	100 00	....
John H. Foley	Expert and agent	"	15, 1890	100 00	1 50
George L. Flanders	Assistant commissioner	"	22, 1890	....	48 62
Marcus A. Perry	Assistant commissioner	"	22, 1890	166 67	89 10
W. G. Spence	Expert and agent	"	22, 1890	12 00	1 87
James W. Walsh	Expert and agent	"	22, 1890	80 00	41 27
Simon Nussbaum	Expert and agent	"	28, 1890	100 00	10 95
J. K. Brown	Commissioner	"	29, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	29, 1890	166 66	....
George B. Fellows	Expert and agent	"	29, 1890	100 00	....
R. D. Clark	Chemist	"	29, 1890	166 66	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
P. J. Sutley	Assistant commissioner	June 11, 1890	$166 67	$87 68
Harry Snyder	Chemist	" 12, 1890	7 00	....
George Bernhard	Expert and agent	" 12, 1890	100 00	6 48
George L. Flanders	Assistant commissioner	" 12, 1890	....	17 01
Marcus A. Perry	Assistant commissioner	" 12, 1890	166 67	85 20
John Gardinier	Expert and agent	" 12, 1890	75 00	25 09
LeRoy S. Gove	Attorney	" 12, 1890	35 00	60
Archibald D. Clark	Expert and agent	" 12, 1890	100 00	45 52
James E. Ryan	Expert and agent	" 12, 1890	100 00	59 13
James W. Mulcay	Expert and agent	" 12, 1890	80 00	17 72
Charles J. Morganstern	Expert and agent	" 12, 1890	80 00	31 45
Wilfred H. Sage	Chemist	" 12, 1890	100 00	....
James W. Walsh	Expert and agent	" 12, 1890	80 00	40 02
James A. Story	Expert and agent	" 12, 1890	75 00	26 38
Frank Elliott	Expert and agent	" 12, 1890	75 00	31 21
Arthur C. Salmon	Attorney	" 12, 1890	80 00	1 05
J. J. Sorogan	Expert and agent	" 12, 1890	100 00	48 05
E. S. Wilson	Expert and agent	" 12, 1890	100 00	70 27
William W. Meeteer	Expert and agent	" 12, 1890	100 00	82 07
B. F. Van Valkenburgh	Assistant commissioner	" 12, 1890	208 33	55 09
R. D. Clark	Chemist	" 12, 1890	....	21 60
W. G. Spence	Expert and agent	" 12, 1890	18 00	3 76
F. P. Vandenburgh	Chemist	" 12, 1890	100 00	....
Joseph F. Geisler	Chemist	" 12, 1890	53 15	50
Stillwell & Gladding	Chemists	" 12, 1890	55 00	1 50
James H. Brown	Assistant commissioner	" 12, 1890	100 00	5 73

Charles Sears	Expert and agent	"	12, 1890	80 00	83 73
James A. Story	Expert and agent	"	12, 1880	75 00	31 00
Charles Van Loon	Laborer	"	12, 1890	30 00	....
Frank Elliott	Expert and agent	"	12, 1890	75 00	15 15
Josiah K. Brown	Commissioner	"	12, 1890	....	24 18
Joseph F. Geisler	Chemist	"	12, 1890	56 00	25
John E. Cady	Expert and agent	"	12, 1890	75 00	91 97
Samuel Abrams	Expert and agent	"	12, 1890	100 00	15 42
W. J. Corbett	Expert and agent	"	12, 1890	80 00	12 50
Peter Drexelius	Assistant commissioner	"	12, 1890	166 67	29 35
Michael Galligan	Expert and agent	"	12, 1890	75 00	20 06
John J. Coughlin	Expert and agent	"	12, 1890	100 00	13 08
William F. Mackey	Attorney	"	12, 1890	60 00	....
William S. O'Brien	Expert and agent	"	12, 1890	66 67	16 63
E. G. Love	Chemist	"	12, 1890	132 00	90
F. D. Tuthill	Assistant commissioner	"	12, 1890	150 00	32 50
William M. Brownell	Attorney	"	12, 1890	15 00	....
T. C. Du Bois	Expert and agent	"	12, 1890	100 00	70 08
George W. Price	Expert and agent	"	12, 1890	80 00	66 11
O. C. Griffis	Expert and agent	"	12, 1890	80 00	81 39
Charles S. Kellogg	Expert and agent	"	12, 1890	81 00	69 55
Thomas R. Gray	Expert and agent	"	23, 1890	100 00	73 93
John H. Foley	Assistant commissioner	"	23, 1890	150 00	13 56
Lewis Cass	Attorney	"	23, 1890	10 00	....
Samuel Lattimore	Chemist	"	23, 1890	130 00	....
George L. Flanders	Assistant commissioner	"	23, 1890	....	90 00
Simon Nussbaum	Expert and agent	July	1, 1890	100 00	10 88
J. K. Brown	Commissioner	"	1, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	1, 1890	166 68	....
George B. Fellows	Expert and agent	"	1, 1890	100 00	....
R. D. Clark	Chemist	"	1, 1890	166 68	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.	Compensation.	Expenses.
George L. Flanders	Assistant commissioner	July 3, 1890	....	$52 38
Charles Van Loon	Laborer	" 3, 1890	$30 00	....
J. K. Brown	Commissioner	" 17, 1890	....	34 02
William G. Spence	Expert and agent	" 17, 1890	90 00	21 92
William W. Meeteer	Expert and agent	" 17, 1890	100 00	88 44
Myron W. Hunt	Expert	" 17, 1890	10 00	2 00
John Gardinier	Expert and agent	" 17, 1890	75 00	54 28
R. D. Clark	Chemist	" 17, 1890	....	6 59
George Bernhard	Expert and agent	" 17, 1890	100 00	2 81
John H. Foley	Assistant commissioner	" 17, 1890	150 00	5 34
Samuel Lattimore	Chemist	" 17, 1890	130 00	....
E. S. Wilson	Expert and agent	" 17, 1890	100 00	40 25
F. D. Tuthill	Assistant commissioner	" 17, 1890	150 00	21 25
F. V. S. Oliver	Attorney	" 17, 1890	30 00	....
J. J. Sorogan	Expert and agent	" 17, 1890	30 00	15 00
Thomas R. Gray	Expert and agent	" 17, 1890	100 00	40 85
George W. Price	Expert and agent	" 17, 1890	80 00	72 71
James E. Ryan	Expert and agent	" 17, 1890	100 00	61 42
Charles J. Morganstern	Expert and agent	" 17, 1890	80 00	33 81
Patrick J. Sutley	Assistant commissioner	" 17, 1890	166 67	73 95
James W. Mulcay	Expert and agent	" 17, 1890	80 00	34 75
T. C. DuBois	Expert and agent	" 17, 1890	100 00	54 11
O. C. Griffis	Expert and agent	" 17, 1890	80 00	64 25
James I. Curtis	Attorney	" 17, 1890	10 00	....
Archibald D. Clark	Expert and agent	" 17, 1890	100 00	67 44
B. F. Van Valkenburgh	Assistant commissioner	" 17, 1890	208 34	42 34

Arthur C. Solomon	Attorney	"	17, 1890	85 00	3 25
Peter Drexelius	Assistant commissioner	"	17, 1890	166 67	35 24
W. F. Mackey	Attorney	"	17, 1890	180 00	75
W. J. Corbett	Expert and agent	"	17, 1890	80 00	11 75
Michael Galligan	Expert and agent	"	17, 1890	75 00	19 33
Samuel Abrams	Expert and agent	"	17, 1890	100 00	16 01
John J. Coughlin	Expert and agent	"	17, 1890	100 00	16 31
Joseph F. Geisler	Chemist	"	17, 1890	18 00	13
Joseph F. Geisler	Chemist	"	17, 1890	86 25	13 71
F. P. Vandenburgh	Chemist	"	17, 1890	100 00	....
E. G. Love	Chemist	"	17, 1890	35 00	3 55
Stillwell & Gladding	Chemists	"	17, 1890	15 00	25
Stillwell & Gladding	Chemists	"	17, 1890	30 00	50
James H. Brown	Assistant commissioner	"	17, 1890	100 00	28 16
Charles Sears	Expert and agent	"	17, 1890	80 00	79 41
Charles S. Kellogg	Expert and agent	"	17, 1890	75 00	56 45
John E. Cady	Expert and agent	"	17, 1890	75 00	85 96
James A. Story	Expert and agent	"	17, 1890	75 00	26 10
Frank Elliott	Expert and agent	"	17, 1890	75 00	67 59
Russell W. Moore	Chemist	"	17, 1890	250 00	....
Richard H. Lansing	Stenographer	"	17, 1890	10 00	....
Wilfred H. Sage	Chemist	"	17, 1890	100 00	....
Marcus A. Perry	Assistant commissioner	"	17, 1890	166 66	69 64
James W. Walsh	Expert and agent	"	17, 1890	80 00	46 45
Thomas Byrnes	Expert and agent	"	17, 1890	40 00	42 78
C. C. Smith	Special agent	"	17, 1890	15 00	17 44
William S. O'Brien	Expert and agent	"	25, 1890	42 08	8 65
George B. Fellows	Expert and agent	"	29, 1890	100 00	....
Simon Nussbaum	Expert and agent	"	31, 1890	100 00	67
George L. Flanders	Assistant commissioner	August	1, 1890	166 66	....
J. K. Brown	Commissioner	"	1, 1890	250 00	....

DETAILED STATEMENT — (*Continued*).

PAYEE.	Position held.	Date of check.		Compensation.	Expenses.
R. D. Clark	Chemist	August	1, 1890	$166 66	....
John H. Foley	Assistant commissioner	"	12, 1890	150 00	$6 35
George Bernhard	Expert	"	12, 1890	100 00	1 91
Peter H. Parker	Assistant commissioner	"	12, 1890	100 00	35 56
Samuel A. Lattimore	Chemist	"	12, 1890	100 00	....
F. P. Vandenburgh	Chemist	"	12, 1890	100 00	6 36
Joseph F. Geisler	Chemist	"	12, 1890	128 00	1 75
E. G. Love	Chemist	"	12, 1890	120 00	....
Stillwell & Gladding	Chemists	"	12, 1890	64 00	1 75
Charles Van Loon	Laborer	"	12, 1890	30 00	....
R. D. Clark	Chemist	"	12, 1890	....	15 53
E. S. Wilson	Expert and agent	"	12, 1890	100 00	47 45
T. R. Gray	Expert and agent	"	12, 1890	100 00	51 05
William S. O'Brien	Expert and agent	"	12, 1890	28 38	13 95
B. F. Van Valkenburgh	Assistant commissioner	"	12, 1890	208 33	33 55
William W. Meeteer	Expert and agent	"	12, 1890	100 00	67 62
J. D. Van Hoevenberg & Holt	Attorneys	"	12, 1890	15 00	....
John Gardinier	Expert and agent	"	12, 1890	75 00	37 39
Michael Galligan	Expert and agent	"	12, 1890	75 00	19 45
John J. Coughlin	Expert and agent	"	12, 1890	100 00	13 30
George L. Flanders	Assistant commissioner	"	12, 1890	....	22 11
Peter Drexelius	Assistant commissioner	"	12, 1890	166 67	30 53
W. J. Corbett	Expert and agent	"	12, 1890	80 00	33 25
Samuel Abrams	Expert and agent	"	12, 1890	100 00	15 94
George W. Price	Expert and agent	"	12, 1890	80 00	55 21
R. H. Palmer	Expert and agent	"	12, 1890	80 00	64 98

T. C. DuBois	Expert and agent	"	12, 1890	100 00	72 29
Josiah K. Brown	Commissioner	"	12, 1890	....	44 80
James H. Brown	Assistant commissioner	"	12, 1890	100 00	27 99
W. G. Spence	Expert and agent	"	12, 1890	93 00	50 46
F. D. Tuthill	Assistant commissioner	"	12, 1890	150 00	40 22
Charles S. Kellogg	Expert and agent	"	12, 1890	81 00	81 72
Joseph F. Geisler	Chemist	"	12, 1890	31 00	25
E. G. Love	Chemist	"	12, 1890	15 00	....
Stillwell & Gladding	Chemists	"	12, 1890	33 00	1 70
William McCauley, Jr	Attorney	"	12, 1890	40 00	....
O. C. Griffis	Expert and agent	"	12, 1890	80 00	71 78
John E. Cady	Expert and agent	"	12, 1890	75 00	98 49
Charles J. Morganstern	Expert and agent	"	12, 1890	80 00	51 35
Charles Sears	Expert and agent	"	12, 1890	80 00	74 23
Patrick J. Sutley	Assistant commissioner	"	12, 1890	166 67	92 07
James Mulcay	Expert and agent	"	12, 1890	80 00	51 28
McNaughton & Taylor	Attorneys	"	12, 1890	100 00	....
James W. Walsh	Expert and agent	"	12, 1890	80 00	54 83
Archibald D. Clark	Expert and agent	"	12, 1890	100 00	55 44
Wilfred H. Sage	Chemist	"	12, 1890	100 00	....
M. A. Perry	Assistant commissioner	"	18, 1890	166 67	18 66
Frank Elliott	Expert and agent	"	18, 1890	75 00	46 23
James A. Story	Expert and agent	"	18, 1890	75 00	27 37
Thomas Byrnes	Expert and agent	"	18, 1890	75 00	88 90
James E. Ryan	Expert and agent	"	18, 1890	100 00	54 23
Simon Nussbaum	Expert and agent	"	29, 1890	100 00	26 89
J. K. Brown	Commissioner	"	29, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	29, 1890	166 66	....
George B. Fellows	Expert and agent	"	29, 1890	100 00	....
R. D. Clark	Chemist	"	29, 1890	166 66	....
George L. Flanders	Assistant commissioner	September	4, 1890	....	120 19

DETAILED STATEMENT — (*Concluded*).

PAYEE.	Position held.	Date of check.		Compensation.	Expenses.
R. H. Palmer	Expert and agent	September	10, 1890	$80 00	$112 63
W. G. Spence	Expert and agent	"	10, 1890	93 00	50 70
James H. Brown	Assistant commissioner	"	10, 1890	100 00	40 28
Samuel Abrams	Expert and agent	"	10, 1890	100 00	14 34
John J. Coughlin	Expert and agent	"	10, 1890	100 00	10 89
Michael Galligan	Expert and agent	"	10, 1890	75 00	18 30
W. J. Corbett	Expert and agent	"	10, 1890	80 00	11 99
Peter Drexelius	Assistant commissioner	"	10, 1890	166 67	27 18
F. P. Vandenburgh	Chemist	"	10, 1890	100 00	7 92
Charles S. Kellogg	Expert and agent	"	10, 1890	72 00	45 83
E. S. Wilson	Expert and agent	"	10, 1890	100 00	56 75
B. F. Van Valkenburgh	Assistant commissioner	"	10, 1890	208 33	38 29
Arthur C. Salmon	Attorney	"	10, 1890	50 00	....
T. R. Gray	Expert and agent	"	10, 1890	100 00	82 14
Archibald D. Clark	Expert and agent	"	10, 1890	100 00	63 34
Charles Van Loon	Laborer	"	10, 1890	30 00	....
George W. Price	Expert and agent	"	10, 1890	80 00	53 77
F. D. Tuthill	Assistant commissioner	"	10, 1890	150 00	23 91
T. C. DuBois	Expert and agent	"	10, 1890	100 00	70 78
William W. Meeteer	Expert and agent	"	10, 1890	100 00	115 14
Peter H. Parker	Assistant commissioner	"	10, 1890	100 00	71 58
John Gardinier	Expert and agent	"	10, 1890	75 00	44 13
O. C. Griffis	Expert and agent	"	10, 1890	80 00	83 52
John E. Cady	Expert and agent	"	10, 1890	75 00	97 10
Charles Sears	Expert and agent	"	10, 1890	80 00	83 06
Joseph F. Geisler	Chemist	"	10, 1890	178 63	1 70

R. D. Clark	Chemist	"	10, 1890	....	60 72
Harry Snyder	Chemist	"	10, 1890	20 00	75
Joseph F. Geisler	Chemist	"	10, 1890	52 50	50
E. G. Love	Chemist	"	10, 1890	16 00	....
E. G. Love	Chemist	"	10, 1890	344 00	....
Stillwell & Gladding	Chemists	"	17, 1890	44 00	75
James E. Ryan	Expert and agent	"	17, 1890	100 00	29 86
James W. Walsh	Expert and agent	"	17, 1890	80 00	55 06
James W. Mulcay	Expert and agent	"	17, 1890	80 00	64 70
John H. Foley	Assistant commissioner	"	17, 1890	150 00	9 60
Wilfred H. Sage	Chemist	"	17, 1890	100 00	....
Samuel Lattimore	Chemist	"	17, 1890	100 00	....
George Bernhard	Expert and agent	"	17, 1890	100 00	1 74
P. J. Sutley	Assistant commissioner	"	17, 1890	166 67	78 72
William McCauley, Jr	Attorney	"	17, 1890	20 00	....
C. J. Morganstern	Expert and agent	"	18, 1890	80 00	70 54
J. K. Brown	Commissioner	"	26, 1890	250 00	....
George L. Flanders	Assistant commissioner	"	26, 1890	166 68	....
George B. Fellows	Expert and agent	"	26, 1890	100 00	....
R. D. Clark	Chemist	"	26, 1890	166 68	....
Thomas Byrnes	Expert and agent	"	30, 1890	75 00	88 61
James A. Story	Expert and agent	"	30, 1890	75 00	35 80
William Manlius Smith	Chemist	"	30, 1890	68 00	....
Frank Elliott	Expert and agent	"	30, 1890	75 00	51 35
Marcus A. Perry	Assistant commissioner	"	30, 1890	166 66	....
Simon Nussbaum	Expert and agent	"	30, 1890	100 00	21 03

DETAILED STATEMENT *of the disbursements and expenses under the provisions of chapter* 515, *Laws of* 1889, *for the year ended September* 30, 1890.

TO WHOM PAID.	Position.	Date.		Services.	Expenses.	Total.
A. S. Delano	Expert	October	9, 1889	$80 00	$47 46	$127 46
R. D. Clark	Chemist	"	10, 1889	50 00	3 00	53 00
A. C. Salmon	Attorney	"	10, 1889	50 00	....	50 00
J. J. Sorogan	Expert	"	10, 1889	100 00	71 04	171 04
B. F. Van Valkenburgh	Assistant commissioner	"	15, 1889	....	14 76	14 76
LeRoy S. Gove	Attorney	November	8, 1889	60 00	....	60 00
C. D. Olendorf	Attorney	"	8, 1889	60 00	....	60 00
J. J. Sorogan	Expert	"	8, 1889	100 00	53 06	153 06
R. D. Clark	Chemist	"	8, 1889	50 00	....	50 00
Hoffman Ruger	Expert	"	8, 1889	110 00	15 18	125 18
F. V. S. Oliver	Attorney	"	8, 1889	60 00	....	60 00
A. S. Delano	Expert	"	8, 1889	80 00	47 13	127 13
Joseph F. Geisler	Chemist	"	8, 1889	161 11	1 25	162 36
Stillwell & Gladding	Chemists	"	8, 1889	19 62	50	20 12
O. C. Griffis	Expert	"	11, 1889	20 00	11 01	31 01
R. D. Clark	Chemist	December	7, 1889	50 00	7 49	57 49
J. J. Sorogan	Expert	"	7, 1889	100 00	52 31	152 31
Hoffman Ruger	Expert	"	7, 1889	75 00	23 51	98 51
A. C. Salmon	Attorney	"	7, 1889	60 00	....	60 00
A. S. Delano	Expert	"	7, 1889	80 00	29 57	109 57
E. J. Wheeler	Chemist	"	11, 1889	65 00	....	65 00
Wm. P. Quinn	Attorney	"	14, 1889	240 00	7 80	247 80

Stillwell & Gladding	Chemists	"	14, 1889	11 25	....	11 25
R. D. Clark	Chemist	January	6, 1890	50 00	....	50 00
A. S. Delano	Expert	"	3, 1890	80 00	55 10	135 10
Hoffman Ruger	Expert	"	3, 1890	75 00	32 74	107 74
E. J. Wheeler	Chemist	"	17, 1890	75 00	....	75 00
J. E. Ryan	Expert	"	15, 1890	....	32 34	32 34
J. J. Sorogan	Expert	"	13, 1890	100 00	76 03	176 03
Simon Nussbaum	Expert	"	30, 1890	33 33	10 45	43 78
J. E. Ryan	Expert	February	13, 1890	....	47 41	47 41
A. S. Delano	Expert	"	13, 1890	80 00	27 02	107 02
Hoffman Ruger	Expert	"	13, 1890	75 00	27 58	102 58
R. D. Clark	Chemist	"	13, 1890	50 00	1 50	51 50
E. J. Wheeler	Chemist	"	13, 1890	75 00	....	75 00
F. P. Vandenburgh	Chemist	"	13, 1890	35 00	....	35 00
J. F. Giesler	Chemist	"	13, 1890	43 13	3 00	46 13
A. S. Delano	Expert	March	5, 1890	80 00	38 42	118 42
Hoffman Ruger	Expert	"	5, 1890	75 00	4 42	79 42
R. D. Clark	Chemist	"	5, 1890	50 00	....	50 00
A. S. Delano	Expert	April	11, 1890	80 00	38 23	118 23
B. F. Van Valkenburgh	Assistant commissioner	"	11, 1890	....	15 25	15 25
R. D. Clark	Chemist	"	11, 1890	50 00	99	50 99
J. F. Giesler	Chemist	"	11, 1890	56 39	....	56 39
Stillwell & Gladding	Chemists	"	11, 1890	52 00	1 50	53 50
E. G. Love	Chemist	"	11, 1890	45 00	1 25	46 25
LeRoy S. Gove	Attorney	"	18, 1890	20 00	....	20 00
Hoffman Ruger	Expert	May	2, 1890	75 00	18 22	93 22
R. D. Clark	Chemist	"	14, 1890	50 00	50	50 50
Hoffman Ruger	Expert	"	15, 1890	75 00	15 58	90 58
A. S. Delano	Expert	"	15, 1890	80 00	32 41	112 41
A. S. Delano	Expert	June	12, 1890	80 00	25 05	105 05
Hoffman Ruger	Expert	"	12, 1890	75 00	19 08	94 08

DETAILED STATEMENT — (*Concluded*).

TO WHOM PAID.	Position.	Date.	Services.	Expenses.	Total.
R. D. Clark	Chemist	June 12, 1890	$50 00	$28 56	$78 56
Geo. B. Fellows	Agent	July 17, 1890	....	5 53	5 53
Hoffman Ruger	Expert	" 17, 1890	75 00	7 60	82 60
B. F. Van Valkenburgh	Assistant commissioner	" 17, 1890	....	14 50	14 50
A. S. Delano	Expert	" 17, 1890	80 00	40 65	120 65
R. D. Clark	Chemist	" 17, 1890	50 00	....	50 00
J. J. Sorogan	Expert	" 17, 1890	70 00	22 02	92 02
R D. Clark	Chemist	August 12, 1890	50 00	....	50 00
J. J. Sorogan	Expert	" 12, 1890	100 00	46 00	146 00
Hoffman Ruger	Expert	" 12, 1890	75 00	15 16	90 16
A. S. Delano	Expert	" 12, 1890	100 00	68 79	168 79
J. J. Sorogan	Expert	September 10, 1890	100 00	60 43	160 43
A. S. Delano	Expert	" 10, 1890	100 00	48 72	148 72
Hoffman Ruger	Expert	" 10, 1890	75 00	20 05	95 05
R. D. Clark	Chemist	" 10, 1890	50 00	....	50 00
B. F. Van Valkenburgh	Assistant commissioner	" 10, 1890	....	10 50	10 50
Joseph F. Geisler	Chemist	" 10, 1890	131 00	2 25	133 25

DETAILED STATEMENT *of the expenses and disbursements under the provisions of chapter* 295, *Laws of* 1888.

TO WHOM PAID.	Position.	Date.	Services.	Expenses.	Total.
G. A. Smith	Cheese expert	October 9, 1889	$150 00	$67 17	$217 17
M. T. Morgan	Cheese expert	“ 9, 1889	125 00	82 78	207 78
W. W. Hall	Cheese expert	“ 9, 1889	125 00	75 44	200 44
F. D. Curtis	Butter expert	“ 9, 1889	80 00	44 27	124 27
F. D. Curtis	Butter expert	November 8, 1889	125 00	108 03	233 03
M. T. Morgan	Cheese expert	“ 8, 1889	135 00	90 77	225 77
W. W. Hall	Cheese expert	“ 8, 1889	135 00	89 10	224 10
G. A. Smith	Cheese expert	“ 8, 1889	150 00	98 59	248 59
F. D. Curtis	Butter expert	“ 22, 1889	60 00	42 02	102 02
G. A. Smith	Cheese expert	December 5, 1889	150 00	89 56	239 56
W. W. Hall	Cheese expert	“ 10, 1889	105 00	42 92	147 92
M. T. Morgan	Cheese expert	“ 10, 1889	120 00	60 25	180 25
F. D. Curtis	Butter expert	“ 28, 1889	30 00	5 19	35 19
G. A. Smith	Cheese expert	January 3, 1890	150 00	66 87	216 87
W. W. Hall	Cheese expert	“ 3, 1890	90 00	36 57	136 57
M. T. Morgan	Cheese expert	“ 3, 1890	60 00	21 95	81 95
W. W. Hall	Cheese expert	February 12, 1890	80 00	52 88	132 88
M. T. Morgan	Cheese expert	“ 12, 1890	90 00	50 28	140 28
F. D. Curtis	Butter expert	“ 12, 1890	20 00	9 00	29 00
G. A. Smith	Cheese expert	“ 12, 1890	150 00	66 06	216 06
W. W. Hall	Cheese expert	March 5, 1890	95 00	52 17	147 17
G. A. Smith	Cheese expert	“ 5, 1890	150 00	70 58	220 58
M. T. Morgan	Cheese expert	“ 5, 1890	115 00	71 57	186 57
G. A. Smith	Cheese expert	April 11, 1890	150 00	71 47	221 47

DETAILED STATEMENT — (*Concluded*).

TO WHOM PAID.	Position.	Date.	Services.	Expenses.	Total.
W. W. Hall	Cheese expert	April 11, 1890	$125 00	$65 14	$190 14
M. T. Morgan	Cheese expert	" 11, 1890	110 00	67 61	177 61
G. A. Smith	Cheese expert	May 15, 1890	150 00	39 40	189 40
W. W. Hall	Cheese expert	" 15, 1890	115 00	45 29	160 29
M. T. Morgan	Cheese expert	" 14, 1890	130 00	68 36	198 36
F. D. Curtis	Butter expert	" 14, 1890	135 00	75 33	210 33
Geo. L. Flanders	Assistant commissioner	" 22, 1890	....	15 00	15 00
G. A. Smith	Cheese expert	June 12, 1890	150 00	60 86	210 86
W. W. Hall	Cheese expert	" 12, 1890	135 00	64 92	199 92
F. D. Curtis	Butter expert	" 12, 1890	110 00	42 09	152 09
M. T. Morgan	Cheese expert	" 12, 1890	135 00	71 28	206 28
W. W. Hall	Cheese expert	July 12, 1890	125 00	86 97	211 97
G. A. Smith	Cheese expert	" 12, 1890	150 00	74 32	224 32
M. T. Morgan	Cheese expert	" 12, 1890	125 00	70 41	195 41
F. D. Curtis	Butter expert	" 17, 1890	55 00	16 48	71 48
G. A. Smith	Cheese expert	August 12, 1890	150 00	69 96	219 96
W. W. Hall	Cheese expert	" 12, 1890	135 00	91 93	226 93
F. D. Curtis	Butter expert	" 12, 1890	100 00	26 05	126 05
M. T. Morgan	Cheese expert	" 12, 1890	135 00	97 42	232 42
E. J. Wheeler	Chemist	" 12, 1890	66 66	....	66 66
G. A. Smith	Cheese expert	September 10, 1890	150 00	58 05	208 05
W. W. Hall	Cheese expert	" 10, 1890	130 00	89 24	219 24
M. T. Morgan	Cheese expert	" 10, 1890	130 00	84 63	213 63
E. J. Wheeler	Chemist	" 10, 1890	100 00	....	100 00
F. D. Curtis	Butter expert	" 16, 1890	120 00	67 29	187 29

J. K. BROWN, *Commissioner.*

APPENDIX.

REPORT OF B. F. VAN VALKENBURGH.

Hon. JOSIAH K. BROWN, *New York State Dairy Commissioner, Capitol, Albany, N. Y.:*

SIR.— I have the honor to submit this my seventh annual report as assistant commissioner, giving in detail the work performed in the second division of the dairy department during the year ended September 30, 1890.

There has been nothing of special importance during the year out of the usual line, except that the dealers in oleomargarine have shown less disposition to force the sale of their goods than in the preceding year; at the same time it has been necessary to be continually on the alert. Should the dealers in imitations of butter discover that we were not continually watching the different freight lines and express routes by which their goods formerly came into the State, they would without doubt again commence distributing these spurious goods to such parties as they could induce to handle them.

There are some parties who would willingly violate the law if they thought that the employés of theDairy Commission were not continually on the ground, watching every avenue through which they could receive the goods, and following them to their destination whenever discovered at the different railroad stations and steamboat landings, express offices or points of distribution. I have found the plan of watching the routes over which these adulterated goods must arrive in order to be distributed within the State, and following them to their destination, a much cheaper and better plan than to go from store to store inspecting, and from one restaurant or hotel to another sampling the butter, or substitute for the same, served on their tables. The work done during the year shows that but very little oleomargarine has been shipped into the State during that period, and as will be seen in the report of cases prosecuted, submitted herewith, only eight parties have been discovered using these spurious goods in violation of the law during the year.

Early in March last I received from you a copy of a letter that had been received by you complaining that oleomargarine was being sold at a store and served at boarding-houses on Fisher's island, and that thereby the market that the dairymen on that island had formerly had for their butter was being supplied with a counterfeit shipped to the island from Connecticut. On receipt of your letter calling my attention to the matter, accompanied by a copy of the letter received by you, I immediately detailed two State experts to look after the matter. They found on looking over the railroad guides that in order to reach Fisher's island they had to go to New London, Connecticut, and thence by boat to the island, which they did. After looking the ground over carefully they became satisfied that the complaint was well founded.

They then proceeded to lay their plans to obtain sufficient evidence to warrant prosecutions. This they found to be very difficult as the party selling the goods kept them secreted on his premises, only putting them out on orders. The first inspection made failed to locate the goods, but on a second and more thorough inspection of the store they discovered the oleomargarine secreted in an old ice-box in a room used mostly for storage of old boxes and rubbish of all sorts.

They found sixteen tubs containing twenty pounds each. These tubs had been packed in the bottom of said ice-box, and then covered several layers deep with potato bags and then the box itself covered with bags and boxes. However, they found the goods and made a case against the proprietor of the store. He was arrested, pleaded guilty and fined $100.

The experts also found that oleomargarine was being served on the tables of one of the boarding-houses on the island and prosecuted the proprietor. He also pleaded guilty and paid a fine of fifty dollars. These prosecutions stopped the sale and use of spurious butter on the island, so far as we have been able to discover since. The proprietor of a restaurant at Greenpoint, Long Island, was prosecuted for using oleomargarine on his tables; he pleaded guilty and the court suspended sentence. Also a merchant on Shelter island was found selling oleomargarine and was prosecuted; he pleaded guilty to the charge and was fined $100. In all of these cases, the parties obtained their supplies from Connecticut. It is very easy for persons living on the islands along the coast, or along the State line on the main land, to obtain these goods surreptitiously from the eastern States; for this reason, it requires a great deal of careful watching to prevent oleomargarine from being handled in violation of law by citizens of this State, but, so far as I can judge, we have prevented them from selling the goods to any great extent.

It is a well-known fact that it has been the custom, for several years past, of the manufacturers and wholesale dealers in oleomargarine in the eastern and western States, in order to induce dealers in this State to handle their goods, to guarantee to such persons to hold them harmless from prosecutions by agreeing to pay the expense of such prosecutions and the fines imposed upon them, but the wholesale dealers and manufacturers are beginning to recognize the fact that they can not, through their agents, sell their spurious goods in New York State with impunity and that the fines imposed upon their customers, together with the expense of defending actions brought by the Dairy Commission, are greater than the profits. They have, for the reasons stated, nearly abandoned the State of New York and will, in all probability, give this State a wide berth as long as the Dairy Commission keep their force on guard.

During the years from 1882 to 1886, laws were enacted by several of the States and by the national government, in the latter year, relative to oleomargarine. Previous to such enactments, according to a statement signed by six of the largest manufacturers in this country, the sale of these goods had reached 100,000,000 pounds per year.

The State laws and the national law had the desired effect and in 1887 the fraudulent sale of oleomargarine was greatly reduced and in New York State was, through the enforcement of the State law, nearly suppressed.

The report of the commissioner of internal revenue for the year ending June 30, 1887, showed that there had been only 21,694,624 pounds of oleomargarine manufactured during the eight months that the national law had been in force. Taking the above figures for a basis on which to estimate the amount manufactured during the year ending June 30, 1887, and taking into consideration that the four months of the year named, not included in the report, were during the heated term when very little oleomargarine can be sold, it is probable that not more than 25,000,000 pounds were produced during the year ending June 30, 1887.

This shows a reduction in the sale of these goods of not less than 75,000,000 pounds, but since the first year under the national law, the manufacturers seem to have recovered slightly from the set-back given them, and by extreme efforts succeeded in increasing the sale of their goods during 1888 and 1889, but during the year 1890, owing to the low price of butter, the sale of oleomargarine was much less than in the two previous years.

The following table, compiled from the statement of the manufacturers referred to for 1886 and the reports of the commissioner of internal revenue, show the amount manufactured and sold during the past five years, to wit:

	Pounds.
Manufacturers' estimate for year ending June 30, 1886	100,000,000
June 30, 1886, to November 1, 1886, estimated at	3,305,376
Eight months internal revenue report to June 30, 1887,	21,694,624
For year ending June 30, 1887	25,000,000
For year ending June 30, 1888, revenue report	34,325,527
For year ending June 30, 1889, revenue report	35,664,026
For year ending June 30, 1890, revenue report	30,960,286

The following statistics, taken from my last annual report, showing the amount of butter handled in New York do not show any increase during the years ending November 1, 1885, 1886 and 1887, but shows that about the same amount was received each year, which is accounted for by the fact that oleomargarine was formerly shipped by the manufacturers and dealers as butter, and entered into the statistics as such, there being no way to separate the two. In addition to the oleomargarine received from other States, and included in the figures hereinafter given, there was a large quantity made in the city and State of New York, previous to 1886, not included in these figures, therefore, the increased production of butter for the New York market within the past five years has equaled the amount of oleomargarine formerly consumed, and has also supplied the increase of population with butter as well as the increased amount for export previously noted.

The following statistics, showing the number of pounds and value of butter received in New York city, yearly, from 1882 to 1889, inclusive, copied from my last annual report, may be of interest as showing the decline from 1882 to 1885, and the advance from 1885 to 1888, and for comparison with the receipts and value of the product handled during the years ending October 31, 1889 and 1890.

The receipts and value of butter handled in New York city for nine years, ending November 30, 1890, were as follows :

For the Year Ending November 30, 1882.

Eastern, 44,215,990 pounds, valued at twenty-nine and one-half cents per pound	$13,043,617 05
Western, 35,648,850 pounds, valued at twenty-eight cents per pound	9,981,678 00
Total, 79,864,840 pounds	$23,025,295 05

For the Year Ending November 30, 1883.

Eastern, 44,804,060 pounds, valued at twenty-six cents per pound	$11,649,055 60
Western, 45,743,850 pounds, valued at twenty-four cents per pound	10,978,524 00
Total, 90,547,910 pounds	$22,627,579 60

For the Year Ending November 30, 1884.

Eastern, 38,263,820 pounds, valued at twenty-four and one-half cents per pound	$9,374,635 90
Western, 49,853,350 pounds, valued at twenty-two cents per pound	10,967,737 00
Total, 88,117,170 pounds	$20,342,372 90

FOR THE YEAR ENDING OCTOBER 31, 1885.

Eastern, 39,480,350 pounds, valued at twenty-two cents per pound........................	$8,685,677 00
Western, 54,086,500 pounds, valued at twenty cents per pound........................	10,817,300 00
Total, 93,566,850 pounds................	$19,502,977 00

These figures show, by comparing 1885 with 1882, that the receipts for 1885 were 13,702,010 pounds in excess of 1882, but the marketable value was $3,522,313.05 less. In order to show the real difference, take the receipts of 1885, 93,566,850 pounds, and value, eastern at twenty-nine and one-half cents and western at twenty-eight cents, the same as the receipts of 1882, we have a total of $26,790,923.25. Deduct the actual value of 1885, $19,502,977, showing a loss on amount handled thus compared of $7,287,496.25.

The receipts and value of butter handled in New York city, for the year ending October 31, 1886, were as follows:

Eastern, 38,985,520 pounds, valued at twenty-three and a half cents per pound..........	$9,161,597 20
Western, 54,716,000 pounds, valued at twenty-one and a half cents per pound............	11,763,940 00
Total, 93,701,520 pounds.................	$20,925,537 20
Deduct value of product handled in 1885......	19,502,977 00
	$1,422,560 20
Deduct value of increased receipts over 1885..	28,954 05
Net gain on same amount of receipts of butter over 1885.....................	$1,393,606 15

Total value of milk and cream handled in New York for the year ending October 31, 1886...	$8,160,750 00

The receipts and value of butter, milk and cream for the year ending October 31, 1887, were as follows:

BUTTER.

Eastern, 37,062,130 pounds, valued at twenty-four cents per pound	$8,894,911 20
Western, 56,650,350 pounds, valued at twenty-two cents per pound	12,463,077 00
Total, 93,712,480 pounds, valued at	$21,357,988 20
Value of milk and cream	9,499,900 00
	$30,857,888 20
Deduct value of butter, milk and cream handled in 1886	29,086,287 20
Net gain in 1887 over 1886	$1,771,601 00
Add net gain in cheese of 1887 over 1886	687,843 00
Total net gain on butter, cheese, milk and cream handled in New York in 1887 over 1886	$2,459,444 00

The receipts and value of dairy products handled in New York city during the year ending October 31, 1888, were as follows:

BUTTER.

Eastern, 31,784,410 pounds, valued at twenty-four and one-half cents per pound	$7,787,180 45
Western, 63,457,950 pounds, valued at twenty-two and one-half cents per pound	14,278,038 75
Total value of butter handled	$22,065,219 20

CHEESE.

Eastern, 98,877,955 pounds, valued at ten and one-half cents per pound	$10,382,185 27
Western, 3,637,260 pounds, valued at eight and one-half cents per pound	309,167 10
In transit for export, 7,636,850 pounds, valued at ten cents per pound	763,685 00
Total, 110,152,065 pounds, valued at	$11,455,037 37

MILK.

Crude, gallons	58,678,390 00
Cream, gallons	1,191,940 00
Condensed milk, gallons, pearl	751,830 00
Total (valued at $9,652,500) gallons	60,622,160 00

Total value of butter handled	$22,065,219 20
Total value of cheese handled	11,455,037 37
Total value of milk and cream handled	9,652.500 00
Total	$43,172,756 57
Deduct total value of dairy product handled in 1887	43,047,771 02
Net gain in 1888 over 1887	$124,985 55

The gain in value over 1887 is light, for the reason that the average price of cheese has been one cent per pound lower than in 1887, although butter averaged one-half cent higher.

The receipts and value of dairy products handled in New York city during the year ending October 31, 1889, were as follows:

BUTTER.

Eastern, 30,626,610 pounds, valued at twenty-three cents per pounds	$7,044,120 30
Western, 77,820,650 pounds, valued at twenty-one cents per pound	16,342,336 50
Total, 108,447,260 pounds, valued at	$23,386,466 80

CHEESE.

Eastern, 101,712,655 pounds, valued at ten cents per pound	$10,171,265 50
Western, 3,660,120 pounds, valued at nine cents per pound	329,410 80
Total, 105,372,775 pounds, valued at	$10,500,676 30

MILK.

Six million four hundred and twenty-one thousand three hundred and eight-seven cans of crude milk of ten gallons	64,213,870
Seventy-six thousand six hundred and seven cans unsweetened condensed milk of ten gallons	766,070
One hundred and thirty-two thousand two hundred and eighty-four cans of cream of ten gallons	1,322,840
Total gallons	66,302,780
Valued at	$9,500,500 00

According to the estimate of those best informed on the subject, there has been 1,500,000 forty-quart cans of milk produced within the State of New York during the year, reported sold to condensers, most of which reaches this market in a condensed form in small cans, valued in the crude state at $2,175,000, making a total of $11,675,000.

Total value of butter handled	$23,386,456 80
Total value of cheese handled	10,500,676 30
Total value of milk, cream and condensed milk handled	11,675,500 00
Total	$45,562,633 10
Deduct total value of dairy product handled in 1888	43,172,756 51
Net gain in 1889 over 1888 is	$2,389,876 59
Less value of condensed milk in small cans, 1888,	2,175,000 00
Total	$214,876 59

The receipts of eastern butter for the year ending October 31, 1889, were 1,157,800 pounds less than in the previous year, while the amount of cheese received was 2,834,700 pounds in excess of 1888, showing that just about the same amount of product of the dairy in butter and cheese from the State of New York has been marketed as in the previous year.

The receipt and value of dairy products handled in New York city during the year ending October 31, 1890, were as follows:

BUTTER.

Eastern, 26,560,660 pounds, valued at twenty cents per pound	$5,312,132 00
Western, 71,094,500 pounds, valued at eighteen cents per pound	12,797,010 00
Total 97,655,160 pounds, valued at	$18,109,142 00

CHEESE.

Eastern, 102,118,115 pounds, valued at nine and three-fourths cents per pound	$9,956,526 22
Western, 3,483,090 pounds, valued at eight cents per pound	278,647 20
Total 105,601,205 pounds, valued at	$10,235,173 42

MILK.

Six million two hundred and eighty-five thousand two hundred and ninety-four cans crude milk of ten gallons each	62,852,940
Sixty-nine thousand three hundred and sixty seven cans unsweetened condensed milk of ten gallons each	693,670
One hundred and thirty-seven thousand three hundred and twenty-two cans cream of ten gallons each	1,373,220
There is also produced within the State of New York and sold during the year to condensers most of which reaches this market in condensed form in small cans; a large amount of crude milk estimated to be equal to 1,650,000 cans of crude milk of ten gallons each	11,650,000
Total gallons	76,569,830
Valued at	$12,085,000 00

Total value of butter handled	$18,109,142 00
Total value of cheese handled	10,233,172 42
Total value of milk, cream and condensed milk handled	12,085,000 00
Total value	$40,427,314 42

The receipts of eastern butter for the year ending October 31, 1890, were 10,792,100 pounds less than during the previous year. This was owing to some extent to the fact that a large amount of the surplus butter produced during the summer of 1889 was shipped forward and held in refrigerators in New York.

The amount of cheese received during the year reported was nearly equal to the last year, being only 228,430 pounds more than in the former year.

The price of butter and cheese has ranged much lower during the year past than during the previous year, which was caused by the enormous make during 1889, which caused very low prices from October, 1889, to May, 1890, but as soon as the surplus of last year's crop was disposed of the market began to recover, and as the fact became apparent that the make of the past season would be much less than the previous year a healthy advance in prices commenced and has continued to the close of this report, and there is now every indication that remunerative prices will be obtained during the coming winter.

The enormous quantity of milk, cream and condensed milk produced in the State of New York and marketed in the large cities in this State, demand that that product receive careful attention by this department, where produced, as well as in the cities where consumed. The value of the milk, cream and condensed milk handled in the cities of New York and Brooklyn during the past year exceeded the value of eastern cheese by $2,128,473.78, and of eastern butter by $6,772,868.

It is estimated that ninety per cent of the butter and cheese reported under the head of eastern butter and cheese, and that about the same percentage of the milk and cream handled are produced in the State of New York.

The following statistics, taken from the records of the New York Mercantile Exchange, show the exports of butter and cheese each year since January 1, 1883:

BUTTER.

From the port of New York, 1883	$18,811,400
From the port of New York, 1884	15,865,600
From the port of New York, 1885	14,601,550
From the port of New York, 1886	11,677,750
From the port of New York, 1887	9,933,400
From the port of New York, 1888	7,099,650
From the port of New York, 1889	19,941,176
From the port of New York, 1890	*17,025,526
From all ports in the United States, 1883	22,375,708
From all ports in the United States, 1884	21,391,196
From all ports in the United States, 1885	19,593,872
From all ports in the United States, 1886	14,404,727
From all ports in the United States, 1887	12,531,171
From all ports in the United States, 1888	8,749,366
From all ports in the United States, 1889	25,983,054
From all ports in the United States, 1890	*22,744,001

CHEESE.

From the port of New York, 1883	$97,897,850
From the port of New York, 1884	96,634,250
From the port of New York, 1885	82,934,750
From the port of New York, 1886	78,763,400
From the port of New York, 1887	72,529,500
From the port of New York, 1888	75,830,700
From the port of New York, 1889	75,046,826
From the port of New York, 1890*	65,368,855
From all ports in the United States, 1883	111,973,140
From all ports in the United States, 1884	111,950,686
From all ports in the United States, 1885	95,047,243
From all ports in the United States, 1886	86,363,685
From all ports in the United States, 1887	87,069,804
From all ports in the United States, 1888	81,595,304
From all ports in the United States, 1889	98,140,486
From all ports in the United States, 1890*	93,940,032

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* Ten months.

The foregoing statistics show that there was a decrease in exports of butter yearly from 1883 to 1888 when the lowest point was reached; this great falling off in the amount of butter exported was mainly due to the fact that the exportation of American butter had been greatly damaged by reason of oleomargarine having in many cases been exported as and for butter by unprincipled dealers.

In 1889 the exports were much greater than in any former year, this was largely due to the unusually low prices that prevailed in consequence of the enormous production of butter during the year, but more especially to the fact that European buyers of American butter had more confidence in our product by reason of our State dairy law and its vigorous enforcement, therefore, they have bought more freely in the New York market during 1889 and 1890. The exports during the ten months reported of the latter year, were a trifle less than in the same period in 1889.

Nearly every one of the exporters of butter from New York to foreign markets have frequently stated to me that their customers in the different European markets have regained confidence in butter bought in the New York markets, but that they will not take a pound of butter from them that is bought in Chicago or other cities, outside of the State of New York. It is very important to the dairy interest that our State dairy laws should be fully sustained in order to hold this foreign trade, which is very necessary to the State dairymen, especially to those that hold their summer make until fall, as it is one of the main outlets for June and July butter when held until fall or winter.

The following is a detailed report of the work performed by each employé of the department between September 30, 1889, and September 30, 1890, in prosecuting violators of the laws relating to the sale of oleomargarine:

Edmund S. Wilson, expert; employed in the above service sixty days:

Number of days in court	13
Number of days obtaining evidence	17
Number of days on special duty	3
Number of days inspecting stores	7
Number of days visiting hotels, restaurants and boarding-houses	20
Total number of days	60

Number of samples purchased and taken	446
Number of samples delivered to chemists	2
Number of evenings obtaining samples	6
Number of appearances in cases	18
Number complaints made	1
Number hotels, restaurants and boarding-houses visited,	130
Number of stores inspected	646
Estimated number of miles traveled	3,905

Thomas R. Gray, expert; employed in the above service 114 days:

Number of days in court	9
Number of days obtaining evidence	24
Number of days inspecting stores	69
Number days visiting hotels, restaurants and boarding-houses	12
Total number of days	114

Number of samples purchased and taken	374
Number of samples delivered to chemists	4
Number of evenings obtaining samples	30
Number of appearances in cases	15
Number complaints made	4
Number hotels, restaurants and boarding-houses visited.	680
Number stores inspected	2,662
Estimated number miles traveled	6,500

Archibald D. Clark, expert, employed in the above service 147 days:

Number days in court	9
Number days obtaining evidence	14
Number days on special duty	66
Number days inspecting stores	48
Number days visiting hotels, restaurants and boarding-houses	10
Total number days	147

Number samples purchased and taken	259
Number samples delivered to chemists	3
Number evenings obtaining samples	20
Number appearances in cases	11
Number complaints made	1
Number hotels, restaurants and boarding-houses visited,	310
Number stores inspected	1,477
Estimated number miles traveled	4,980

William W. Meeteer, expert, employed in the above service 114 days:

Number days in court	9
Number days obtaining evidence	24
Number days inspecting stores	69
Number days visiting hotels, restaurants and boarding-houses	12
Total number of days	114

Number samples purchased and taken	372
Number samples delivered to chemists	4
Number evenings obtaining samples	58
Number appearances in cases	19
Number complants made	2
Number hotels, restaurants and boarding-houses visited,	680
Number stores inspected	2,662
Estimated number miles traveled	6,530

Joseph F. Geisler, Ph. C.:

Number of analyses of butter samples	4
Number of appearances in cases	12
Number of days in court	6

Edward G. Love, Ph. D.:

Number of analyses of butter samples	2
Number of appearances in cases	2
Number of days in court	2

Charles M. Stillwell, A. M. and Thomas S. Gladding, A. M.:

Number of analyses of butter samples	7
Number of appearances in cases	3
Number of days in court	1

LeRoy S. Gove, counsel:

Number of cases prosecuted	1
Number of cases disposed of	1
Number of convictions	1
Number of appearances in cases	4
Number of days in court	4

Francis V. S. Oliver, counsel:

Number of cases prosecuted	1
Number of cases disposed of	1
Number of convictions	1
Number of appearances in cases	2
Number of days in court	2

Arthur C. Salmon, counsel:

Number of cases prosecuted	4
Number of cases disposed of	4
Number of convictions	4
Number of appearances in cases	6
Number of days in court	6

Charles D. Olendorf, counsel:

Number of cases prosecuted	2
Number of cases disposed of	2
Number of convictions	2
Number of appearances in cases	4
Number of days in court	4

TOTAL. (*Oleo.*)

Number of days (experts)	435
Number of days in court	65
Number of days obtaining evidence	79
Number of days on special duty	69
Number of days inspecting stores	193

Number of days visiting hotels, restaurants and boarding-houses	54
Number of samples purchased and taken	1,451
Number of samples delivered to chemists	13
Number of evenings obtaining samples	114
Number of appearances in cases	96
Number of complaints made	8
Number of stores inspected	7,447
Number of hotels, restaurants and boarding-houses visited	1,728
Estimated number of miles traveled	21,915
Number of analysis "butter samples"	13
Number of cases prosecuted	8
Number of cases disposed of	8
Number of convictions	8
Amount of fines imposed	$450

The status of the following four prosecutions for violation of the oleomargarine law was fully reported in my Sixth Annual Report to you, which were disposed of as follows, to wit:

DISPOSITION OF PROSECUTIONS.

Case number.	NAMES.	Called for trial	Court.	Result.	Fined.
1509 D ...	The People *v.* Korn........	October 3, 1889	Special Sessions, N. Y...	Pleaded guilty..	$50 00
1082 K ...	The People *v.* Bott	October 9, 1889	Special Sessions, N. Y...	Pleaded guilty..	50 00
1083 K ...	The People *v.* Rowls.......	October 16, 1889	Special Sessions, N. Y...	Pleaded guilty..	50 00
1084 K ...	The People *v.* Egan........	October 3, 1889	Special Sessions, N. Y...	Pleaded guilty..	50 00

The foregoing statement, representing four cases remaining untried, as reported to you September 30, 1889, shows the following result:

Four convicted in Special Sessions and fined $200.

The following statement represents prosecutions commenced during the year ending September 30, 1890, under chapter 183, Laws of 1885, as amended by chapter 577, Laws of 1886, and by chapter 583, Laws of 1887, relating to the sale of oleomargine and the present status of the cases.

CASE No. 1085 K.

The People v. Griffing.

Justice Preston's Court of Special Sessions, Shelter Island, N. Y.

Warrant issued December 26, 1889; answered to December 26, 1889; adjourned to February 4, 1890. Pleaded guilty. Fined $100.

Counsel A. C. Salmon.

Witnesses: Arch. D. Clark, Thos. R. Gray, and Chas. M. Stillwell, chemist.

CASE No. 1086 K.

The People v. Newert.

Justice Davis' Court of Special Sessions, Greenport, N. Y.

Warrant issued March 28, 1890; answered to March twenty-eight; adjourned to April eighteenth, to twenty-fifth. Pleaded guilty. Sentence suspended.

Counsel, A. C. Salmon.

Witnesses: Arch. D. Clark, Thos. R. Gray, and Chas. M. Stillwell, chemist.

CASE No. 1259 H.

The People v. Meanny.

Tombs Police Court, New York City.

Warrant issued February 20, 1890; answered to February twenty-first; held to bail for trial at Special Sessions. Called for trial February twenty-sixth; adjourned to March sixth. Tried. Convicted. Fined fifty dollars.

Counsel, Chas. D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and E. G. Love, chemist.

CASE No. 568 G.

THE PEOPLE *v.* BUSCHMAN.

Tombs Police Court, New York.

Warrant issued February 12, 1890; answered to February fourteenth; held to bail for trial at the Special Sessions. Called for trial February nineteenth. Pleaded guilty. Fined fifty dollars.

Counsel, Chas. D. Olendorf.

Witnesses: Thos. R. Gray, E. S. Wilson, and Chas. M. Stillwell, chemist.

CASE No. 1258 H.

THE PEOPLE *v.* STRITMATTER.

Tombs Police Court, New York.

Warrant issued February 25, 1890; answered to February twenty-sixth. Held to bail for trial at Special Sessions. Called for trial March sixth; adjourned to March tenth, to twelfth. Pleaded guilty. Fined fifty dollars.

Counsel, LeRoy S. Gove.

Witnesses: W. W. Meeteer, Arch. D. Clark, and Joseph F. Geisler, chemist.

CASE No. 569 G.

THE PEOPLE *v.* WILBUR.

Justice Davis' Special Sessions Court, Greenport.

Warrant issued April 18, 1890; answered to April eighteenth. Pleaded guilty. Fined $100.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and C. M. Stillwell, chemist.

CASE No. 81 F.

THE PEOPLE *v.* HARRIS.

Justice Davis' Special Sessions Court, Greenport, Suffolk county, N. Y.

Warrant issued April 18, 1890; answered to April twenty-fourth. Pleaded guilty. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and C. M. Stillwell, chemist.

CASE No. 380 G.

The People *v.* Dick.

Tombs Police Court, New York.

Warrant issued June 10, 1890; answered to June tenth; held to bail for trial at Special Sessions. Called for trial June thirteenth. Pleaded guilty. Fined fifty dollars.

Counsel, F. V. S. Oliver.

Witnesses: T. R. Gray, E. S. Wilson, and C. M. Stillwell, chemist.

The result of the eight preceding prosecutions for violations of the oleomargarine law, commenced between September 30, 1889, and September 30, 1890, were as follows:

Total convictions	8
Total fines imposed	$450 00

I have made a careful inquiry among the wholesale dealers in cheese in this city to learn whether or not there was any improvement in the quality of the cheese received in this market during the two past seasons as compared with those received in previous years. I am pleased to state that nearly every dealer whom I have consulted with has stated that he has noticed quite an improvement in the quality. Many of them mentioning factories that have been greatly improved, stating at the same time that the improvement dated from the time the State instructors visited the factories; others named factories that were greatly improved, but stated that they had no knowledge as to whether the State instructors had or had not visited the factories. All of them agreeing that the system of instruction adopted by the Dairy Commissioner as to how to make the best cheese possible is a step in the right direction, and state that they hope to see the Legislature increase the appropriation for the dairy department, so that a much larger percentage of the cheese factories can be visited by instructors, and if any chance for improvement to do whatever may be found necessary to be done to correct faults in the manufacture and handling of this important product.

It is also suggested by the wholesale dealers in cheese that the work could be profitably extended to the producers of milk for the manufacture of cheese by instructing them as to the proper manner of caring for their milk, in order that the best possible cheese may be produced from it. But to do that, a much larger force than now employed would be required. The greatest improvement in the quality of cheese during the past two years has been in the northern tier of counties, especially in Oswego county. That county has, in the opinion of dealers, improved more than any other in the State in the manufacture of cheese. Whether this is caused by reason of more work having been been done in that county by the cheese instructors or from other causes, I am unable to state.

It is almost the universal opinion of the trade in the city of New York, that the law known as the cheese-brand law, has proved to be an excellent thing for the dairy interest, as it has had a tendency to cause a greater demand for full-cream cheese, thereby causing an increased consumption of that article. A large share of the small dealers who buy cheese for their retail trade, will not buy any cheese that do not have the State brand on them, and the exporters prefer the State-brand cheese for export, as it is a guarantee to the dealer in foreign markets that the cheese are full cream. This increased demand, from year to year, for State-brand cheese, has made it for the interest of many manufacturers to use the brand, and has, at the same time, reduced the demand for part "skim cheese," and caused a large share of those that formerly skimmed enough cream from each 100 pounds milk to make from one to two pounds of butter, to abandon that practice and make full-cream cheese.

REPORT ON MILK.

The great reduction in the sale of oleomargarine during the past year has enabled me to give more attention to milk sold in this division of the dairy department than in former years.

During the fall of 1889 and winter of 1889–1890, the attention of the State experts was mostly directed to looking after the adulteration of milk sold in the cities of New York and Brooklyn, as well as in the smaller cities and villages in this division of the dairy department, which resulted in keeping the adulteration down to a minimum during the period named.

Early in May I thought it advisable to withdraw the experts from the duty of inspecting milk in the hands of wholesale dealers, peddlers and retail dealers for a short period and detail them to the duty of inspecting milk while yet in the hands of the producers in New York, Kings, Queens, Suffolk and Richmond counties, and in that part of Westchester county situated in this division of the dairy department.

The experts were, according to this plan, detailed to perform the above-named service and were continued in that duty until about the middle of July.

During the latter part of June and early in July a great many complaints reached me from consumers of milk, that the milk being served to them was not of as good quality as it had formerly been and asking me to examine into the matter to see if an improvement could not be made. This, with other considerations, determined me to recall the experts from duty in the rural districts and to detail them to work in the city of New York. A very short period of time inspecting the milk on sale in the city by the wholesale and retail dealers, as well as by the peddlers, demonstrated the fact that the milk was being adulterated to an enormous extent by a large per cent of those handling it, in fact, the adulteration was nearly as bad as it was found to be when the Dairy Commission first commenced inspecting milk in the city in 1886. A large number of prosecutions were promptly brought, which reduced the percentage of adulteration to a great extent. Having the adulteration in the city of New York under control, I turned my attention to Brooklyn and found that during the absence of the experts from that city, several of the dealers in milk had discovered that the experts were not doing duty in the city and were taking advantage of their absence by adulterating their milk, but we did not find as great a percentage of the dealers violating the law as in New York.

The work was then extended to the smaller cities and villages, in all of which a great increase of adulteration was found as compared with the winter and early spring months.

The state in which the milk was found in the cities and villages, after a two months' absence of the State experts, proves that unless the inspection of milk in the hands of dealers is kept up continually, they will adulterate their milk by adding water thereto. The State experts were continued on in the duty of inspecting milk in the cities and villages, and at the summer resorts along the coast from the time of their return from the country districts, about the middle of July, until the end of September, and at the close of the year reported, the adulteration was again reduced to as low a percentage as it has been at any time since the Dairy Commission commenced the supervision of milk sold in the cities.

A great deal of attention has been given during the year to the condition of the stables located in the suburbs of New York and Brooklyn, and to the food being used, to learn whether or not any of those keeping cows in them and producing milk for market were violating the dairy laws. The stables have, in most cases, been found to be in good condition, showing a marked improvement on the condition they were found in when the first inspections were made under the Dairy Commission, and the food used has, with one exception, been good and wholesome. The party referred to was found to be feeding brewers' swill and was prosecuted; a full explanation of the disposition of the case appears in the report of cases prosecuted. There is a large number of stables in this division, and the work of properly looking after them has required a considerable proportion of the service performed in this division.

Careful attention has been given during the year to inspection of herds, to learn whether or not any were diseased with pleuro-pneumonia, tuberculosis or other disease that might cause unwholesome milk to be produced. I am pleased to be able to state that the condition of the cows that are kept for the production of milk for market has been unusually healthy during the past year, and that so far as we have been able to discover, no milk from unhealthy cows has been marketed from dairies kept within this district. There is no doubt that the stringent measures adopted by the United States Bureau of Animal Industry, to stamp out pleuro-pneumonia and tuberculosis, has had the desired effect.

Early in August last, you forwarded to this office a copy of a letter from a citizen of Quogue, L. I., in which the attention of the Dairy Commission was called to the fact that the cows owned by one John Foster, were diseased. Immediately after receiving a copy of said letter and your instructions to examine into the matter and report to you, I detailed two State dairy experts to visit the premises of said Foster and inspect his cows and report on the condition they found them in, which was done. They reported that his herd had formerly consisted of six cows and one stag, and that one of the cows had died by choking with a carrot, and another had died from the effects of parturition, and that the stag was diseased, but what the nature of ailment was, they were unable to determine.

During the month of September, an inspection of milk arriving over the different railroads and steamboats, for consumption in New York and Brooklyn, was made after the milk had been delivered by the common carriers to the grocers and peddlers. The plan adopted was, as usual, to obtain from the police department a detail of two or more officers for duty at each depot when inspected. With their assistance, the wagons were formed in line as they came off the ferries or from the railroad depots into the streets. We then inspected the milk found on each wagon before allowing it to leave the line.

With the assistance of a detail of two experts from the third division of the dairy department and the entire force in this division, we were enabled, with the assistance of from four to six police officers kindly detailed for this duty by acting Superintendent of Police Thomas Byrnes, to cover all the points at which any one railroad delivered milk in one night, while on other nights we were able to inspect all milk delivered by two or more of the roads delivering only small quantities, thereby giving the milk arriving in the city a thorough inspection. The milk arriving over the New York and Northern road delivered at High Bridge station, comprising 1,030 cans, was inspected on the night of September twenty-fifth. The milk arriving over the New York and Harlem railroad, delivered at East Forty-eighth street and Lexington avenue, comprising 2,363 cans, was inspected on the night of September thirtieth. The milk arriving over the New York, Ontario and Western railroad, delivered at Jay and West Forty-second Street ferries, comprising 1,972 cans, was inspected on the night of September twenty-ninth.

The milk arriving over the New York, Susquehanna and Western railroad, delivered at Cortland and Desbrosses street ferries, comprising 1,344 cans, was inspected on the night of September twenty-seventh.

The milk arriving over the West Shore railroad, delivered at Jay and West Forty-second street ferries, comprising 932 cans, was inspected on the night of September twenty-ninth.

The milk arriving over the Delaware, Lackawanna and Western railroad, delivered at Barclay and Christopher street ferries, comprising 1,508 cans, was inspected on the night of October ninth.

The milk arriving over the Homer Ramsdell Transportation Company's boats, delivered at Franklin street and West One Hundred and Twenty-ninth street docks, comprising 800 cans, was inspected on the night of September twenty-ninth.

The milk arriving over the New York, Lake Erie and Western railroad, delivered at Chambers and Twenty-third street ferries, comprising 3,879 cans, was inspected on the night of September twenty-seventh.

The milk arriving over the New Jersey Central railroad, delivered at Liberty street ferry, comprising 416 cans, was inspected on the night of September twenty-fifth.

The milk arriving over the New York, New Haven and Hartford railroad, delivered at Montgomery street and One Hundred and Twenty-ninth street docks, comprising 878 cans, was inspected on the night of September twenty-fifth.

The milk inspected when delivered by each railroad and steamboat line represents one day's shipment over each line for consumption in New York and Brooklyn, to which must be added 959 cans average per day by miscellaneous conveyances.

The result of these inspections showed by the test applied that only a small percentage had been adulterated. The following statement will also show from which section the best average grade of milk is received in New York, to wit:

	Cans.	Doubtful standard.
New York, Lake Erie and Western railroad....	3,879	1
New York and Harlem railroad................	2,363	16
New York, Ontario and Western railroad......	1,972	19
New York, Susquehanna and Western railroad,	1,344	14
New York and Northern railroad..............	1,030	3
West Shore railroad.........................	932	9
New York, New Haven and Hartford railroad..	878	6
Delaware, Lackawanna and Western railroad..	1,508	11
Homer Ramsdell Transportation Company....	800	5
New Jersey Central railroad.................	416	4
Long Island railroad (estimated)............	292	....
Miscellaneous receipts by wagons (estimated)..	959	....

Average cans per day for September, 16,371.

The total number of dairies and creameries of milk represented by the above statement is 2,907.

The foregoing statement shows that of the 16,371 cans inspected when delivered to the dealers in New York, only eighty-eight cans were found by the test applied to be of doubtful quality, being only one-half of one per cent of the whole amount delivered in the cities by the producers and creamerymen on the day that the above inspections were made. This ratio of adulteration shows just about the same as the inspections of country milk received in the city during the year has averaged, which is a much smaller percentage of adulteration than the milk inspected after it had been received by the dealers has shown. Special attention has been given to milk shipped to this market from Connecticut and New Jersey, which, as shown by my sixth annual report, was adulterated to a much greater extent than that shipped by New York State producers, the milk coming from New Jersey and Connecticut showing last year four cans in each 100 to be adulterated before it arrived in New York, while milk from New York State producers showed only three-fourths of one can in each 100.

Early in the year the milk found in the hands of dealers in Connecticut and New Jersey milk was found to be adulterated, as usual, to a much greater extent than that produced in New York State. In order to remedy this evil, and properly protect the consumers, I commenced several prosecutions of dealers in adulterated milk produced in the above-named States. This had the desired effect, as it caused many of the dealers that had formerly handled milk produced in Connecticut and New Jersey to notify the shippers of milk from these States that they would handle no more of their milk. The shippers of adulterated milk, finding that they could not sell their milk in this market unless it was pure, were compelled to ship it without skimming or watering, at least to such an extent as to bring it below the lowest standard allowed under the law. The inspections of milk produced in the States of Connecticut and New Jersey, made during the year covered by this report, show that the standard of milk produced in the above-named States and shipped to New York and Brooklyn, has been nearly up to the standard of milk produced within the State. Between September 30, 1889, and September 30, 1890, the milk shipped from 3,486 dairies and 150 creameries, and the milk sold by 548 peddlers and 4,251 stores, comprising 31,985 cans, was inspected, showing by the test applied the following result:

	Cans.	Per cent.		Cans.
3,477 dairy's milk....	13,075	Showing ½	Doubtful or	65
139 creamery milk..	5,558	Showing ½	Doubtful or	28
648 peddler's milk..	3,238	Showing 1½	Doubtful or	48
5,081 store's milk....	10,114	Showing 1¾	Doubtful or	180
Total	31,985	....	....	*321

The quality of the milk sold in the cities in this division of the Dairy Department, as a whole, has continued to improve and is now conceded by physicians and others in a position to judge, to be better than it ever was since any attention has been given to the milk supplied to consumers in New York and Brooklyn; at the same time, the scarcity of ice and the great expense to which the dealers have been, during the past season, to keep their milk from souring, has reduced their profits to a minimum, and has no doubt had a tendency to induce some of them to adulterate their goods in order to realize a fair profit on their sales. All of this class of dealers have been promptly prosecuted whenever found with milk in their possession that was below the standard required by law.

The scarcity of ice during the past season has made it very difficult and expensive for producers and dealers to handle milk and keep it sweet until it reached the consumers. This caused several parties who have been manufacturing and selling to creamerymen in the western States for several years past, a chemical compound composed of borax and other drugs that would prevent milk and cream from becoming acid for several days, to introduce their compound to the dealers in milk in the cities in this State. Early in August last, I learned that the dealers in these compounds called preservaline, rex magnus, and other names, had succeeded in inducing many wholesale and retail dealers to use their compound in the milk they were selling to consumers. Immediately after learning this fact, I called upon

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* Cans of which showed by the test applied, slight indications of adulteration.

you at your office and consulted with you as to what was proper to do in the matter. You then instructed me to prosecute those found using these deleterious drugs in milk sold for use as food. Very soon thereafter I commenced several prosecutions against parties violating the law by adulterating milk sold by them with a compound that contained borax or any other chemicals. This had the desired effect, and the practice of using preservatives in milk was abandoned by the dealers in a very short time after they learned that the Dairy Commissioners were looking after the matter.

The danger to the health of consumers is not as great from one treatment of milk with any one of the preservatives as from the fact that it is liable to be first treated by the producer, second by the creamerymen, third by the wholesale dealer, and fourth by the retail dealer. If each of these parties, through whose hands the milk is liable to pass before it reaches the consumer, should add one-half ounce of the compound as prescribed by the manufacturers, each gallon of milk so treated would contain two ounces of a compound of boracic acid, borax, soda and phosphate, which would not be a healthy article to give to a child that was sustained entirely on milk food.

The status of the following two prosecutions for violation of the law relating to adulterated milk, was reported to you in my sixth annual report. The final disposition of them is given:

BOTTLE No. 1742.

THE PEOPLE *v.* REINHARDT.

Called for trial October 10, 1889, Special Sessions Court, N. Y. Pleaded guilty. Fined twenty-five dollars.

BOTTLE No. 1186.

THE PEOPLE *v.* DUNCAN.

Called for trial October 24, 1889. Special Sessions Court, Woodsburgh, N. Y. Tried by jury; acquitted.

The foregoing statement, representing two cases remaining untried, as reported to you September 30, 1889, for violating the law relating to adulterated milk, shows the following results:

One convicted in special sessions, fined twenty-five dollars.

One acquitted in special sessions.

The following statement represents prosecutions during the year ending September 30, 1890, for violations of chapter 183, Laws of 1885, as amended by chapter 223, Laws of 1887, relating to adulterated milk and the present status of the cases:

BOTTLE No. 1176.

THE PEOPLE *v.* PRICE.

Justice Hunting's Special Sessions Court, East Willettson, N. Y.

Warrant issued October 11, 1889; answered to October seventeenth; adjourned to thirty-first. Tried by jury; acquitted.

Counsel, Benj. W. Downing.

Witnesses: T. R. Gray, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 1112.

THE PEOPLE *v.* CLINTON.

Justice Hewlett's Court, Woodsburgh, N. Y.

Warrant issued August 13, 1889; answered to October twenty-fourth, and pleaded guilty. Fined twenty-five dollars.

Counsel, Benj. W. Downing.

Witnesses: T. R. Gray, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 1185.

THE PEOPLE *v.* HAWKHURST.

Justice Hunting's Court, East Willettson, N. Y.

Warrant issued October 11, 1889; answered to October seventeenth. Pleaded guilty. Sentence suspended.

Counsel, Benj. W. Downing.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1188.

THE PEOPLE *v.* CLINTON.

Justice Hewlett's Court, Woodsburgh, N. Y.

Warrant issued October 24, 1889; answered to October twenty-four. Pleaded guilty. Sentence suspended.

Counsel, B. W. Downing.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1746.

The People *v.* Vosgrove.

Jefferson Market Police Court, New York.

Warrant issued August 12, 1889; answered to November eighth; held to bail for trial at Special Sessions. Called for trial November eighteenth. Pleaded guilty. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1809.

The People *v.* Graham.

Justice Tigh's Special Sessions Court, Brooklyn, N. Y.

Warrant issued September 30, 1889; answered to October fourth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, J. J. Sorogan, and C. M. Stillwell, chemist.

BOTTLE No. 1791.

The People *v.* Weeks.

Justice Lewis' Court, Babylon, N. Y.

Warrant issued October 9, 1889; answered to October tenth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 877.

The People *v.* Hempel.

Justice Thayer's Police Court, Yonkers, N. Y.

Warrant issued September 16, 1889; answered to October fifteenth; held to bail for trial at Special Sessions; called for trial October sixteenth; adjourned to twenty-fifth, to November eighth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 1113.

THE PEOPLE *v.* INGLAR.

Justice Thayer's Court, Yonkers, N. Y.

Warrant issued September 16, 1889; answered to October fifteenth; held to bail for trial at Special Sessions. Called for trial October sixteenth; adjourned to October twenty-fifth, to November eighth, to eleventh, and tried by jury. Convicted. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and C. M. Stillwell, chemist.

BOTTLE No. 1180.

THE PEOPLE *v.* RUSSELL.

Justice Thayer's Court, Yonkers, N. Y.

Warrant issued September 16, 1889; answered to October fifteenth; held to bail for trial at Special Sessions. Called for trial October sixteenth; adjourned to twenty-fifth, to November first, and tried by jury; disagreement, set for retrial November eleventh; adjourned to twenty-second; tried by jury. Convicted. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and C. M. Stillwell, chemist.

BOTTLE No. 1798.

THE PEOPLE *v.* SUDMEYER.

Essex Market Police Court, New York.

Warrant issued October 23, 1889; answered to October twenty-eighth, adjourned to October twenty-ninth, for examination and discharged.

Counsel, Charles D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1175.

The People *v.* Schlick.

Justice McKenna's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January third. Pleaded guilty. Fined twenty-five dollars.

Witnesses: Thos. R. Gray, E. S. Wilson, and C. M. Stillwell, chemist.

BOTTLE No. 1174.

The People *v.* Warnken.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January sixth; held to bail for trial at Special Sessions. Called for trial January tenth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: Thos. R. Gray, E. S. Wilson, and Thomas S. Gladding, chemist.

BOTTLES No. 1178.

The People *v.* Puelle.

Justice McKenna's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1794.

The People *v.* Ledu.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued December 30, 1889; answered to January 3, 1890; held to bail for trial at Special Sessions. Called for trial January seventeenth and dismissed.

Witnesses: E. S. Wilson, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 1796.

THE PEOPLE v. SCHLEUTER.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued December 30, 1889; answered to January 3, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1806.

THE PEOPLE v. KUHL.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued December 30, 1889; answered to January 3, 1890. Pleaded guilty Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and Thomas S. Gladding, chemist.

BOTTLE No. 1793.

THE PEOPLE v. AUBKE.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued December 30, 1889; answered to January 3, 1890; held to bail for trial at Special Sessions. Called for trial January seventeenth. Pleaded guilty. Sentence suspended.

Witnesses: E. S. Wilson, T. R. Gray, and Thomas S. Gladding, chemist.

BOTTLE No. 1821.

THE PEOPLE v. BRYANT.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued February 5, 1890; answered to February seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1819.

THE PEOPLE v. PLACK.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January sixth, held to bail for trial at Special Sessions. Called for trial January tenth; adjourned to twenty-fourth, to thirty-first, to February seventh, to fourteenth, to twenty-first, and pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1818.

THE PEOPLE *v.* FRUH.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and Thomas S. Gladding, chemist.

BOTTLE No. 1817.

THE PEOPLE *v.* HEGEMAN.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued January 3, 1890; answered to January seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1799.

THE PEOPLE *v.* KARLE.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued January 20, 1890; answered to January twenty-third; held to bail for trial at Special Sessions. Called for trial January twenty-seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1800.

THE PEOPLE *v.* BRUSCKE.

Essex Market Police Court, New York.

Warrant issued January 20, 1890; answered to January twenty-first; held to bail for trial at Special Sessions. Called for trial

January twenty-ninth; adjourned to thirtieth and tried. Convicted. Fined twenty-five dollars.

Counsel, C. D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and Thomas S. Gladding, chemist.

BOTTLE No. 1816.

THE PEOPLE *v.* LEVY.

Essex Market Police Court, New York.

Warrant issued January 20, 1890; answered to January twenty-first; held to bail for trial at Special Sessions. Called for trial February third. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1830.

THE PEOPLE *v.* LIEBERMAN.

Essex Market Police Court, New York.

Warrant issued January 20, 1890; answered to January twenty-first; held to bail for trial at Special Sessions. Called for trial February third. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1795.

THE PEOPLE *v.* SILVERSTEIN.

Essex Market Police Court, New York.

Warrant issued February 6, 1890; answered to February tenth; adjourned to thirteenth and held to bail for trial at Special Sessions. Called for trial June twelfth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1844.

The People *v.* Martin.

Morrisania Police Court, New York.

Warrant issued February 20, 1890; answered to February twenty-first; held to bail for trial at Special Sessions. Called for trial March third. Pleaded guilty. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1849.

The People *v.* Meyer.

Jefferson Market Police Court, New York.

Warrant issued February 18, 1890; answered to February nineteenth; held to bail for trial at Special Sessions. Called for trial February twenty-fourth. Tried, convicted and fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 1848.

The People *v.* Pape.

Jefferson Market Police Court, New York.

Warrant issued February 18, 1890; answered to February nineteenth; held to bail for trial at Special Sessions. Called for trial February twenty-seventh. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 1845.

The People *v.* Walker.

Jefferson Market Police Court, New York.

Warrant issued February 18, 1890; answered to February nineteenth; held to bail for trial at Special Sessions. Called for trial

February twenty-fourth. Pleaded guilty. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1842.

THE PEOPLE v. STIRN.

Jefferson Market Police Court, New York.

Warrant issued February 18, 1890; answered to February nineteenth; held to bail for trial at Special Sessions. Called for trial February twenty-seventh. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1838.

THE PEOPLE v. LEVY.

Essex Market Police Court, New York.

Warrant issued February 26, 1890; answered to February 28, 1890; held to bail for trial at Special Sessions. Called for trial March tenth. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1835.

THE PEOPLE v. MONSEES.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued March 5, 1890; answered to March sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1839.

The People *v.* Boehm.

Essex Market Police Court, New York.

Warrant issued February 26, 1890; answered to February twenty-eighth, and discharged on examination.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1832.

The People *v.* Reilly.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued March 11, 1890; answered to March thirteenth, and pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1834.

The People *v.* Hennesy.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued March 11, 1890; answered to March thirteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1801.

The People *v.* Aperion.

Essex Market Police Court, New York.

Warrant issued March 28, 1890; answered to March twenty-sixth; held to bail for trial at Special Sessions. Called for trial March thirty-first. Tried. Convicted. Fined twenty-five dollars.

Counsel, Charles D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1805.

THE PEOPLE *v.* KATZ.

Essex Market Police Court, New York.

Warrant issued February 28, 1890; answered to March third; held to bail for trial at Special Sessions. Called for trial March twelfth. Tried. Convicted and fined twenty-five dollars.

Counsel, C. D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1804.

THE PEOPLE *v.* COHEN.

Essex Market Police Court, New York.

Warrant issued February 28, 1890; answered to March third; held to bail for trial at Special Sessions. Called for trial March twelfth. Tried. Convicted. Fined twenty-five dollars.

Counsel, C. D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1862.

THE PEOPLE *v.* MINKE.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued March 13, 1890; answered to March fourteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1884.

THE PEOPLE *v.* MEMMER.

Harlem Police Court, New York.

Warrant issued April 22, 1890; answered to April twenty-fourth; adjourned to twenty-eighth for examination; held to bail for trial at General Sessions. Before grand jury June twelfth. Adjourned indefinitely.

Counsel, C. D. Olendorf.

Witnesses: J. J. Sorogan, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 1866.

The People *v.* Young.

Justice Goetting's Police Court Brooklyn, N. Y.

Warrant issued April 22, 1890; answered to April twenty-third. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1906.

The People *v.* Hyatt.

Justice Donohue's Police Court, Yonkers, N. Y.

Warrant issued May 9, 1890; answered to May fifteenth, and tried and convicted; sentence suspended.

Counsel, LeRoy S. Gove.

Witnesses: O. C. Griffis, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1867.

The People *v.* Ditson.

Justice Smith's Police Court, Flushing, N. Y.

Warrant issued May 9, 1890; answered to May twelfth; adjourned to May nineteenth, and tried by jury. Acquitted.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1863.

The People *v.* Dahl.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued April 22, 1890; answered to April twenty-third; held to bail for trial at Special Sessions. Called for trial April twenty-ninth. Pleaded guilty. Fined forty dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1910.

THE PEOPLE v. MCARDLE.

Justice Smith's Police Court, Flushing, N. Y.

Warrant issued May 14, 1890; answered to May sixteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: O. C. Griffis, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1864.

THE PEOPLE v. VANDERCAN.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued May 16, 1890; answered to May twentieth; adjourned to twenty-first. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1865.

THE PEOPLE v. RUCKERT.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued May 24, 1890; answered to May twenty-sixth; adjourned to twenty-seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1896.

THE PEOPLE v. GLOECKNER.

Jefferson Market Police Court, New York.

Warrant issued May 27, 1890; answered to May twenty-eighth; held to bail for trial at Special Sessions. Called for trial June ninth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Giesler, chemist.

BOTTLE No. 1895.

THE PEOPLE *v.* STRIECHER.

Jefferson Market Police Court, New York.

Warrant issued May 27, 1890; answered to May twenty-eighth; held to bail for trial at Special Sessions. Called for trial June sixth; adjourned to ninth and tried. Convicted. Fined twenty-five dollars.

Counsel, C. D. Olendorf.

Witnesses: W. W. Meeteer, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1921.

THE PEOPLE *v.* MATTHIES.

Justice Hunold's Court, College Point, N. Y.

Warrant issued May 29, 1890; answered to June ninth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1919.

THE PEOPLE *v.* FROELICH.

Justice Hunold's Court, College Point, N. Y.

Warrant issued May 29, 1890; answered to June ninth; held to bail for trial at Special Sessions. Called for trial June seventeenth. Tried. Convicted. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and F. G. Love, chemist.

BOTTLE No. 1917.

THE PEOPLE *v.* YOUNG.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued May 23, 1890; answered to May twenty-sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1918.

THE PEOPLE *v.* MARTINS.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued May 27, 1890; answered to June second. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1915.

THE PEOPLE *v.* GREFE.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued May 23, 1890; answered to May twenty-sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1920.

THE PEOPLE *v.* ROHDE.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued May 23, 1890; answered to May twenty-sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses, T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1822.

THE PEOPLE *v.* INTERMAN.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued May 22, 1890; answered to May twenty-fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1883.

THE PEOPLE *v.* KOLDEHOFE.

Harlem Police Court, New York.

Warrant issued April 28, 1890; answered to April twenty-eighth; held to bail for trial at General Sessions. Before grand jury, May twenty-ninth. Not indicted.

Witnesses: W. W. Meeteer, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 1868.

THE PEOPLE *v.* BLOHM.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued June 16, 1890; answered to June seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1869.

THE PEOPLE *v.* VON DRUGE.

Tombs Police Court, New York.

Warrant issued June 11, 1890; answered to June twelfth; adjourned to June thirteenth for examination, and held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 2508.

THE PEOPLE *v.* HEINBOCKEL.

Tombs Police Court, New York.

Warrant issued July 2, 1890; answered to July third; held to bail for trial at Special Sessions. Called for trial September seventeenth; adjourned to September twenty-fourth, and tried. Convicted. Fined twenty-five dollars.

Counsel, Chas. D. Olendorf.

Witnesses: W.W. Meeteer, E. S. Wilson, and Thos. S. Gladding, chemist.

BOTTLE No. 1894.

THE PEOPLE *v.* ALTER.

Justice Tiernan's Court, Staten Island, N. Y.

Warrant issued July 8, 1890; answered to July ninth. Pleaded guilty. Fined twenty-five dollars.

Counsel, Van Hovenberg & Holt.

Witnesses: Arch. D. Clark, W. W. Meeteer, and Thos. S. Gladding, chemist.

BOTTLE No. 1892.

THE PEOPLE *v.* MILLER.

Justice Tiernan's Police Court, Staten Island, N. Y.

Warrant issued July 8, 1890; answered to July eleventh. Pleaded guilty. Fined twenty-five dollars.

Counsel, Van Hovenberg & Holt.

Witnesses: W. W. Meeteer, Arch. D. Clark, and Thos. S. Gladding, chemist.

BOTTLE No. 1900.

THE PEOPLE *v.* VIEBROCK.

Tombs Police Court, New York.

Warrant issued July 2, 1890; answered to July third; held to bail for trial at Special Sessions. Called for trial September seventeenth; adjourned to twenty-fourth, to October eighth.

Counsel, C. D. Olendorf.

Witnesses: W. W. Meeteer, E. S. Wilson, and Thos. S. Gladding, chemist.

BOTTLE No. 1927.

THE PEOPLE *v.* BROWER.

Justice Steinhardt's Court, Hicksville, N. Y.

Warrant issued August 6, 1890; answered to August fifteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and C. M. Stillwell, chemist.

BOTTLE No. 1928.

THE PEOPLE *v.* CARLSEN.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 22, 1890; answered to July twenty-fifth; adjourned to twenty-eighth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and C. M. Stillwell, chemist.

BOTTLE No. 1930.

THE PEOPLE *v.* HANSON.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 22, 1890; answered to July twenty-eighth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: Thos. R. Gray, W. W. Meeteer, and C. M. Stillwell, chemist.

BOTTLE No. 1929.

THE PEOPLE *v.* DUNCAN.

Justice Steinhardt's Court, Hicksville, N. Y.

Warrant issued August 6, 1890; answered to August fifteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and C. M. Stillwell, chemist.

BOTTLE No. 2515.

THE PEOPLE *v.* BOYLE.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2516.

THE PEOPLE *v.* DOHT.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August twentieth; adjourned to twenty-first for examination and dismissed.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2513.

THE PEOPLE *v.* SEIVERS.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 6, 1890; answered to August twelfth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 1931.

THE PEOPLE *v.* SHOENAKER.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July twenty-second; answered to July twenty eighth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2512.

THE PEOPLE *v.* MCENROE.

Justice Engle's Court, Brooklyn, N. Y.

Warrant issued August 4, 1890; answered to August fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 2511.

THE PEOPLE *v.* NEILSON.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 2514.

THE PEOPLE *v.* BRUNING.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 6, 1890; answered to August twelfth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2510.

THE PEOPLE *v.* FINKELDAY.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and C. M. Stillwell, chemist.

BOTTLE No. 1872.

The People *v.* O'Connor.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1873.

The People *v.* Schardavoyne.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth; adjourned to twenty-seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. A. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1923.

The People *v.* Nagle.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth; adjourned to twenty-seventh, to September eleventh and pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1878.

The People *v.* Van Duyn.

Justice Conrady's Court, New Utrecht, N. Y.

Warrant issued August 27, 1890; answered to September tenth; adjourned to nineteenth, and tried. Convicted. Fined twenty-five dollars.

Counsel, B. W. Downing.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2732.

THE PEOPLE *v.* VORRATG.

Harlem Police Court, New York.

Warrant issued August 8, 1890; answered to August eleventh; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and C. M. Stillwell, chemist.

BOTTLE No. 1877.

THE PEOPLE *v.* MILLER.

Essex Market Police Court, New York.

Warrant issued August 8, 1890; answered to August twelfth; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1875.

THE PEOPLE *v.* LIPPMAN.

Essex Market Police Court, New York.

Warrant issued August 8, 1890; answered to August twelfth; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1876.

THE PEOPLE *v.* LOITZ.

Essex Market Police Court, New York.

Warrant issued August 19, 1890; answered to August twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Adjourned to October eighth.

Counsel, C. D. Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2726.

The People *v.* Burke.

Yorkville Police Court, New York.

Warrant issued August 6, 1890; answered to August seventh; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2729.

The People *v.* Grune.

Harlem Police Court, New York.

Warrant issued August 8, 1890; answered to August eleventh, and discharged.

Witnesses: W. W. Meeteer, W. S. O'Brien, and E. G. Love, chemist.

BOTTLE No. 2724.

The People *v.* Buhrfiend.

Yorkville Police Court, New York.

Warrant issued August 6, 1890; answered to August seventh; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2725.

The People *v.* Neuhardt.

Yorkville Police Court, New York.

Warrant issued August 6, 1890; answered to August seventh held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2715.

THE PEOPLE *v.* MOLLINEUX.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh; adjourned to fifteenth, to twentieth, and pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 2721.

THE PEOPLE *v.* STIEHN.

Jefferson Market Police Court, New York.

Warrant issued August 4, 1890; answered to August fifth; held to bail for trial at Special Sessions. Callad for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2722.

THE PEOPLE *v.* WOHRMAN.

Jefferson Market Police Court, New York.

Warrant issued August 4, 1890; answered to August fifth; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2723.

THE PEOPLE *v.* HOLLY.

Jefferson Market Police Court, New York.

Warrant issued August 4, 1890; answered to August fifth; held to bail for trial at Special Sessions. Called for trial September seventeenth; adjourned to twenty-fourth and tried. Convicted. Fined $100.

Counsel, C. D. Olendorf.

Witnesses: W. W. Meeteer, W. S. O'Brien, and J. F. Geisler, chemist.

BOTTLE No. 2758.

The People *v.* Jaeger.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2757.

The People *v.* Brand.

Essex Market Police Court, New York.

Warrant issued August 8, 1890; answered to August twelfth; adjourned to thirteenth; held to bail for trial at Special Sessions. Called for trial September seventeenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2762.

The People *v.* Foley.

Essex Market Police Court, New York.

Warrant issued August 8, 1890; answered to August twelfth; held to bail for trial at General Sessions.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2755.

The People *v.* Robinson.

Justice Thayer's Court, Yonkers, N. Y.

Warrant issued September 26, 1890; answered to September thirtieth; adjourned to October seventh.

Counsel, A. J. Burns.

Witnesses: E. S. Wilson, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 2781.

THE PEOPLE v. DELEHANTY.

Justice Thayer's Court, Yonkers, N. Y.

Warrant issued September 26, 1890; answered to September thirtieth; adjourned to October seventh.

Counsel, A. J. Burns.

Witnesses: E. S. Wilson, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 1932.

THE PEOPLE v. GARDES.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 31, 1890; answered to August fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2517.

THE PEOPLE v. MILLS.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 31, 1890; answered to August fourth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2718.

THE PEOPLE v. DILL.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 31, 1890; answered to August fourth Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 2714.

The People v. McGuekin.

Justice Steinhardt's Court, Hicksville, N. Y.

Warrant issued August 21, 1890; answered to August thirtieth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2716.

The People v. Otten.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued July 31, 1890; answered to August fourth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 2719.

The People v. Hogan.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 2747.

The People v. Baass.

Justice Conrad's Court, West Brighton, N. Y.

Warrant issued August 26, 1890; answered to September tenth; adjourned to September nineteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 2745.

THE PEOPLE *v.* VAN GLAHN.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 7, 1890; answered to August eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 2770.

THE PEOPLE *v.* HELMES.

Essex Market Police Court, New York.

Warrant issued August 27, 1890; answered to August twenty-eighth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined fifty dollars.

Counsel, Barnard & Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1924.

THE PEOPLE *v.* SCHWARTJE.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued June 4, 1890; answered to June fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1870.

THE PEOPLE *v.* BAACK.

Tombs Police Court, New York.

Warrant issued July 22, 1890; answered to July twenty-third; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined twenty-five dollars.

Counsel, Barnard & Olendorf.

Witnesses: E. S. Wilson, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 2761.

The People v. Bruning.

Essex Market Police Court, New York.

Warrant issued August 19, 1890; answered to August twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth; adjourned to October eighth.

Counsel, Barnard & Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2763.

The People v. Vogt.

Essex Market Police Court, New York.

Warrant issued August 19, 1890; answered to August twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined twenty-five dollars.

Counsel, Barnard & Olendorf.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2754.

The People v. Mohrmann.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1879.

The People v. Meyer.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 18, 1890; answered to August nineteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2788.

THE PEOPLE v. STEFFENS.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 4, 1890; answered to September fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 2803.

THE PEOPLE v. COLE.

Tombs Police Court, New York.

Warrant issued September 18, 1890; answered to September eighteenth; held to bail for trial at General Sessions.

Counsel, F. V. S. Oliver.

Witnesses: Arch. D. Clark, George W. Price, and J. F. Geisler, chemist.

BOTTLE No. 2784.

THE PEOPLE v. KRANTZ.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued August 4, 1890; answered to August fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 2782.

THE PEOPLE v. GIER.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 4, 1890; answered to September fifth; adjourned to September eighth, to eighteenth, and tried. Convicted. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E S. Wilson, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 2908.

The People *v.* Koster.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued September 17, 1890; answered to September eighteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: Arch. D. Clark, Geo. W. Price, and J. F. Geisler, chemist.

BOTTLE No. 2830.

The People *v.* Havecker.

Justice Walsh's Police Court, Brooklyn, N. Y.

Warrant issued September twenty-seventh; answered to September twenty-ninth; adjourned to October sixth.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, W. W. Meeteer, and Thos. S. Gladding, chemist.

BOTTLE No. 2906.

The People *v.* Thoms.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued September 17, 1890; answered to September eighteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: Arch. D. Clark, Geo. W. Price, and J. F. Geisler, chemist.

BOTTLE No. 2907.

The People *v.* Doppman.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued September 17, 1890; answered to September eighteenth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: Arch. D. Clark, Geo. W. Price, and J. F. Geisler, chemist.

BOTTLE No. 2735.

THE PEOPLE *v.* REUTHER.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-ninth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2736.

THE PEOPLE *v.* RUDOLPH.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-ninth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2765.

THE PEOPLE *v.* CLANCY

Justice Manley's Police Court, Long Island City, N. Y.

Warrant issued August 21, 1890; answered to September eleventh; held to bail for trial at Special Sessions. Called for trial September eighteenth; adjourned to twenty-third, to October second.

Counsel, Benj. W. Downing.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2743.

THE PEOPLE *v.* ROCK.

Justice Frost's Court, Glen Cove, N. Y.

Warrant issued September 16, 1890; answered to September seventeenth; adjourned to twenty-fifth and tried. Convicted. Fined twenty-five dollars.

Counsel, B. W. Downing.

Witnesses: W. W. Meeteer, T. R. Gray, and Thos. S. Gladding, chemist.

BOTTLE No. 2778.

The People *v.* Lundy.

Justice Conrady's Court, Bath Beach, N. Y.

Warrant issued August 26, 1890; answered to September tenth. Pleaded guilty. Fined twenty-five dollars.

Counsel, B. W. Downing.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2771.

The People *v.* Ernst.

Justice Tighe's Police Court, Brooklyn, N. Y.

Warrant issued August 21, 1890; answered to August twenty-sixth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 2768.

The People *v.* Wilkins.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-ninth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 2769.

The People *v.* Guilfoile.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-ninth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, W. W. Meeteer, and E. G. Love, chemist.

BOTTLE No. 1916.

The People *v.* Fairbrother.

Justice Smith's Court, Flushing, N. Y.

Warrant issued May 9, 1890; answered to May twelfth. Pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

DISTILLERY WASTE — BOTTLE No. 100 (Special).

The People *v.* Tierney.

Justice Manley's Police Court, Long Island City, N. Y.

Warrant issued April 26, 1890; answered to May first; adjourned to thirteenth, to twentieth, to twenty-seventh, and adjourned indefinitely by the court, by reason of defendant stating that he has sold his cows and had discontinued the production of milk. The statement of defendant having been found to be true, the court on a later date dismissed the case.

Counsel, Cooke & Salmon.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1925.

The People *v.* Doscher.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued May 24, 1890; answered to May twenty-sixth; adjourned to twenty-seventh, to June sixth, and pleaded guilty. Fined twenty-five dollars.

Counsel, A. C. Salmon.

Witnesses: E. S. Wilson, T. R. Gray, and J. F. Geisler, chemist.

BOTTLE No. 1833.

The People *v.* Meisner.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued May 6, 1890; answered to May seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1899.

The People *v.* Dashby.

Justice Steinhart's Court, Hicksville, N. Y.

Warrant issued August 13, 1890; answered to August sixteenth; adjourned to twenty-first. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2751.

The People *v.* Koster.

Essex Market Police Court, New York.

Warrant issued August 27, 1890; answered to August twenty-eighth; held to bail for trial at Special Sessions. Called for trial September 24, 1890. Tried. Convicted. Fined fifty dollars.

Counsel, Barnard & Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1926.

The People *v.* Caslendeick.

Justice Kenna's Police Court, Brooklyn, N. Y.

Warrant issued June 20, 1890; answered to June twenty-first; adjourned to twenty-second, to July seventh, to October seventh.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2752.

The People *v.* Goodman.

Essex Market Police Court, New York.

Warrant issued August 27, 1890; answered to August twenty-eight; held for trial at Special Sessions. Called for trial September twenty-fourth; adjourned to October eighth.

Counsel, Barnard & Olendorf.

Witnesses: T. R. Gray, E. S. Wilson, and E. G. Love, chemist.

BOTTLE No. 1880.

THE PEOPLE v. CHRISTGAN.

Justice Walsh's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 1881.

THE PEOPLE v. GETREN.

Justice Walsh's Police Court, Brooklyn, N. Y.

Warrant issued August 25, 1890; answered to August twenty-seventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2739.

THE PEOPLE v. JOHNSON.

Justice Manley's Police Court, Long Island City, N. Y.

Warrant issued August 21, 1890; answered to September eleventh; adjourned to September eighteenth, to October eighth.

Counsel, B. W. Downing.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2737.

THE PEOPLE v. McGEE.

Justice Manley's Police Court, Long Island City, N. Y.

Warrant issued August 21, 1890; answered to September eleventh; adjourned September eighteenth. Tried by jury. Acquitted.

Counsel, B. W. Downing.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2738.

The People *v.* Shaw.

Justice Conrady's Court, Bath Beach, N. Y.

Warrant issued August 26, 1890; answered to August twenty-seventh; adjourned to September tenth, to nineteenth. Tried. Convicted. Fined twenty-five dollars.

Counsel, B. W. Downing.

Witnesses: W. W. Meeteer, T. R. Gray, and E. G. Love, chemist.

BOTTLE No. 2789.

The People *v.* Meyer.

Justice Manley's Police Court, Long Island City, N. Y.

Warrant issued September 4, 1890; answered to September eleventh. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 2708.

The People *v.* Steffins.

Harlem Police Court, New York.

Warrant issued August 20, 1890; answered to August twenty-first; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined $150.

Counsel, Barnard & Olendorf.

Witnesses: Arch. D. Clark, J. J. Sorogan, and J. F. Geisler, chemist.

BOTTLE No. 2780.

The People *v.* Koster.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 4, 1890; answered to September fifth. Pleaded guilty. Fined twenty-five dollars.

Witnesses: E. S. Wilson, J. J. Sorogan, and E. G. Love, chemist.

BOTTLE No. 1847.

THE PEOPLE *v.* REICKERS.

Harlem Police Court, New York.

Warrant issued June 16, 1890; answered to June eighteenth; held to bail for trial at Special Sessions. Called for trial September 17, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: W. W. Meeteer, J. J. Sorogan, and E. G. Love, chemist.

PEOPLE *v.* ROONEY.

Brooklyn, Kings county, N. Y.

The claim against the above named was for the civil penalty incurred by the sale of milk adulterated with borax, on July 28, 1890.

The State experts, upon examination of the milk, took two samples, one of which was left with defendant, the other was taken to a chemist, who, upon analyzing the same, reported that it was adulterated by the addition of borax. Soon after the above date, defendant called upon me to learn what disposition was to be made of the matter. I informed him that I intended commencing proceedings against him for the civil penalty of $100, provided for by law. He (Rooney) stated that this was the first time his milk had been pronounced adulterated, and that he wanted to settle the matter without going into court. I then informed him that he could call upon A. C. Salmon, attorney for the Dairy Commission, who would probably arrange the matter.

On September 25, 1890, Rooney called at the office of the counsel for the Dairy Commission in Brooklyn, and paid the penalty, $100, to A. C. Salmon as such counsel, who forwarded the same to me, after which I paid one-half (fifty dollars) of such penalty to the State Treasurer, one-fourth (twenty-five dollars) to the treasurer of the Brooklyn police pension fund, and one-fourth (twenty-five dollars) to the treasurer of the Brooklyn firemen's pension fund, as provided by law.

The result of the 147 preceding prosecutions for violations of the milk law, commenced between September 30, 1889, and September 30, 1890, were as follows:

Convicted on trial or pleading guilty	124
Awaiting trial at Special Sessions	13

Acquitted at Special Sessions	3
Complaints dismissed on examination	7
Total	147
Total fines imposed	$3,380

The following tables give a detailed report of work performed by each employé in this division of the department between September 30, 1889, and September 30, 1890, in enforcing the laws relating to the sale of adulterated milk:

William W. Meeteer, expert, employed in the above service 133 days:

Number of days in court	40
Number of days inspecting milk	55
Number of days obtaining evidence	23
Number of days inspecting herds	15
Total number of days	133

Number of creamerymen's milk inspected	28
Number of stores inspected	1,158
Number of dairies' milk inspected at creameries and railroad depots	802
Number of peddlers' milk inspected	117
Number of inspections of stables	62
Number of cows inspected	1,112
Total number of milk inspections	7,295
Total number of samples delivered to chemists	54
Total number of samples condensed milk delivered to chemists	12
Total number of complaints made	33
Total number of appearances in cases	126
Estimated number of miles traveled	7,755

Edmund S. Wilson, expert, employed in the above service 242 days:

Number of days in court	92
Number of days inspecting milk	100
Number of days obtaining evidence	31

Number of days on special duty	15
Number of days inspecting herds	4
Total number of days	242

Number of creamerymen's milk inspected	51
Number of dairies' milk inspected on delivery at creameries and railroad depots	741
Number of stores inspected	1,323
Number of peddlers' milk inspected	140
Number of inspections of stables	72
Number of cows inspected	2,317
Total number of milk inspections	7,689
Total number of samples delivered to chemists	56
Total number of complaints made	50
Total number of appearances in cases	148
Estimated number of miles traveled	13,135

Thomas R. Gray, expert, employed in the above service 189 days:

Number of days in court	80
Number of days inspecting milk	70
Number of days obtaining evidence	25
Number of days on special duty	6
Number of days inspecting herds	8
Total number of days	189

Number of creamerymen's milk inspected	40
Number of stores inspected	1,260
Number of dairies' milk inspected on delivery at creameries and railroad depots	757
Number of peddlers' milk inspected	181
Number of inspection of stables	90
Number of cows inspected	1,460
Total number of milk inspections	7,284
Total number of samples delivered to chemists	68
Total number of complaints made	48
Total number of appearances in cases	161
Estimated number of miles traveled	8,540

Joseph J. Sorogan, expert, employed in the above service forty-one days:

Number of days in court	20
Number of days inspecting milk	14
Number of days obtaining evidence	7
Total number of days	41

Number of stores inspected	830
Number of dairies' milk inspected on delivery at creameries and railroad depots	484
Number of peddlers' milk inspected	100
Total number of milk inspections	3,240
Total number of samples delivered to chemists	6
Total number of complaints	6
Total number of appearances in cases	30
Estimated number of miles traveled	4,280

Archibald D. Clark, expert, employed in the above service 106 days:

Number of days in court	7
Number of days inspecting milk	47
Number of days obtaining evidence	13
Number of days on special duty	15
Number of days inspecting herds	24
Total number of days	106

Number of creamerymen's milk inspected	20
Number of stores inspected	510
Number of dairies' milk inspected on delivery at creameries and railroad depots	693
Number of inspections of stables	11
Number of cows inspected	310
Number of peddlers' milk inspected	110
Total number of samples condensed milk delivered to chemists	8
Total number of milk inspections	6,277
Total number of samples delivered to chemists	27

Total number of complaints made	9
Total number of appearances in cases	19
Estimated number of miles traveled	6,245

Joseph F. Geisler, Ph. C.:

Number of analyses of condensed milk	5
Number of analyses of milk samples	63
Number of appearances in cases	27
Number of days in court	18

Edward G. Love, Ph. D.:

Number of analyses of distillery waste	1
Number of analyses of milk samples	101
Number of analyses of condensed milk	5
Number of appearances in cases	30
Number of days in court	16

Charles M. Stillwell, A. M., and Thomas S. Gladding, A. M.:

Number of analyses of milk samples	42
Number of analyses of condensed milk	5
Number of appearances in cases	11
Number of days in court	4

Prof. Elwyer Waller:

Number of analyses of condensed milk	5

Arthur C. Salmon, counsel:

Number of cases prosecuted	20
Number of cases disposed of	18
Number of convictions	16
Number of acquittals	1
Number of appearances in cases	38
Number of days in court	25

Charles D. Olendorf, counsel:

Number of cases prosecuted	28
Number of cases disposed of	23
Number of convictions	22
Number of acquittals	1
Number of appearances in cases	45
Number of days in court	24

Van Hovenburgh and Holt, counsel:

Number of cases prosecuted	2
Number of cases disposed of	2
Number of convictions	2
Number of appearances in cases	4
Number of days in court	3

Benjamin W. Downing, counsel:

Number of cases prosecuted	8
Number of cases disposed of	7
Number of convictions	6
Number of acquittals	1
Number of appearances in cases	14
Number of days in court	9

Arthur J. Burns, counsel:

Number of cases prosecuted	2
Number of cases awaiting trial	2
Number of appearances in cases	2
Number of days in court	1

F. V. S. Oliver, counsel:

Number of cases prosecuted	1
Number of cases disposed of	1
Number of convictions	1
Number of appearances in cases	3
Number of days in court	3

LeRoy S. Gove, counsel:

Number of cases prosecuted	1
Number of cases disposed of	1
Number of convictions	1
Number of appearances in court	2
Number of days in court	2

TOTAL (*Milk*).

Number of days experts, counsel and chemists	816
Number of days in court	344
Number of days inspecting milk	286
Number of days obtaining evidence	99
Number of days on special duty	36

Number of days inspecting herds	51
Number of milk inspections	31,985
Number of dairies' milk inspected	3,477
Number of stores inspected	5,081
Number of peddlers' milk inspected	648
Number of creamerymen's milk inspected	139
Number of stables inspected	235
Number of cows inspected	5,199
Number of samples delivered to chemists	232
Number of complaints made	146
Number of appearances in cases	484
Number of analyses of samples of milk	206
Number of analyses of condensed milk	20
Number of cases prosecuted	147
Number of cases disposed of	134
Number of convictions	124
Number of acquittals	3
Number of cases not disposed of	13
Number of cases dismissed from calendar	7
Estimated number of miles traveled	41,955
Amount of fines imposed in above cases	$3,355

The number of samples of milk delivered to chemists for analysis is greatly in excess of complaints made, by reason of a large number of samples having been taken to chemists to learn whether or not they were adulterated with Rex Magnus, preservaline or other chemical compounds.

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER.

	WEEK ENDING OCT. 7.			WEEK ENDING OCT. 14.			WEEK ENDING OCT. 21.			WEEK ENDING OCT. 28.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,840	98	35	3,737	98	41	3,740	95	34	3,782	91	34
New York Central and Harlem	2,526	4	102	2,561	4	71	2,658	5	81	2,698	5	85
New York, Ontario and Western	1,636	37	......	1,605	36	......	1,622	43	......	1,606	41	......
New York, Susquehanna and Western	1,354	22	......	1,315	21	......	1,315	23	......	1,290	23	......
West Shore	832	39	67	816	14	69	815	12	67	792	12	66
New York, New Haven and Hartford	846	......	......	830	......	......	830	......	......	838	......	......
Long Island	305	......	......	305	......	......	305	......	......	305	......	......
New Jersey Central	500	.....	......	500	......	......	500	......	......	500	......	......
New York and Northern	1,108	......	......	1,120	......	......	1,131	......	......	1,113	......	......
Homer Ramsdell Transportation Co	857	42	......	857	42	......	857	42	......	857	42	......
Delaware and Lackawanna (M. and E. Division)	1,000	3	......	1,000	3	......	1,000	3	......	1,000	3	......
Miscellaneous	758	......	......	758	......	......	758	......	......	758	......	......
Totals	15,562	245	204	15,404	218	181	15,531	223	182	15,539	217	185

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING NOV. 4.			WEEK ENDING NOV. 11.			WEEK ENDING NOV. 18.			WEEK ENDING NOV. 25.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,782	94	31	3,836	96	32	3,760	108	31	3,720	99	13
New York Central and Harlem	2,683	5	88	2,356	5	107	2,653	4	108	2,662	5	110
New York, Ontario and Western	1,645	37	......	1,708	40	......	1,755	47	......	1,800	61	......
New York, Susquehanna and Western	1,326	20	......	1,394	19	......	1,375	32	......	1,384	28	......
West Shore	780	16	60	762	10	58	728	13	54	724	9	46
New York, New Haven and Hartford	828	......	......	815	......	......	795	......	......	793	......	......
Long Island	400	......	......	400	......	......	400	......	......	400	......	......
New Jersey Central	500	10	......	500	10	......	500	10	......	500	10	......
New York and Northern	1,083	......	......	1,070	......	......	1,051	......	......	1,046	......	......
Homer Ramsdell Transportation Co	890	36	......	890	36	......	890	36	......	890	36	......
Delaware and Lackawanna (M. and E. Division)	667	4	......	667	4	......	667	4	......	667	4	......
Miscellaneous	800	......	......	800	......	......	800	......	......	800	......	......
Totals	15,385	222	179	15,198	220	197	15,374	254	193	15,386	252	169

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING DEC. 2.			WEEK ENDING DEC. 9.			WEEK ENDING DEC. 16.			WEEK ENDING DEC. 23.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,650	109	32	3,640	64	33	3,660	100	35	3,668	112	36
New York Central and Harlem	2,674	5	108	2,690	4	98	2,656	4	106	2,656	4	108
New York, Ontario and Western	1,776	52	......	1,721	50	......	1,742	50	......	1,643	49	......
New York, Susquehanna and Western	1,370	30	......	1,353	25	......	1,380	29	......	1,362	36	......
West Shore	730	9	52	722	8	53	734	9	50	771	10	42
New York, New Haven and Hartford	183	......	......	817	......	......	816	......	......	785	......	......
Long Island	388	......	......	388	......	......	388	......	......	388	......	......
New Jersey Central	484	11	......	484	11	......	484	11	......	484	11	......
New York and Northern	1,008	......	......	1,036	......	......	1,058	......	......	1,071	......	......
Homer Ramsdell Transportation Company	814	29	......	814	29	......	814	29	......	814	29	......
Delaware and Lackawanna (M. and E. Division)	597	3	......	597	3	......	597	3	......	597	3	......
Miscellaneous	806	......	......	806	......	......	806	......	......	806	......	......
Totals	14,480	248	192	15,068	191	184	15,135	235	191	15,045	254	186

Daily Average Receipts in New York, Per Week, of Cans of Forty Quarts each of Milk, Condensed Milk and Cream, as taken from the Milk Reporter — (*Continued*).

	Week Ending Dec. 30.			Week Ending Jan. 6.			Week Ending Jan. 13.			Week Ending Jan. 20.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,630	107	33	3,669	103	34	3,676	104	37	3,721	100	35
New York Central and Harlem	2,660	5	109	2,640	4	82	2,832	4	96	2,871	4	110
New York, Ontario and Western	1,619	51	......	1,591	38	......	1,652	41	......	1,646	37	......
New York, Susquehanna and Western	1,388	28	......	1,352	25	......	1,420	26	......	1,436	33	......
West Shore	780	13	59	804	12	70	836	11	53	791	12	53
New York, New Haven and Hartford	768	......	......	813	......	......	818	......	......	826	......	......
Long Island	388	......	......	384	......	......	384	......	......	384	......	......
New Jersey Central	484	11	......	485	10	......	485	10	......	485	10	......
New York and Northern	1,090	......	......	1,100	......	......	1,120	......	......	1,140	......	......
Homer Ramsdell Transportation Co.	814	29	......	796	25	......	818	26	......	832	28	......
Delaware and Lackawanna (M. and E Division)	597	3	......	594	4	......	595	4	......	595	4	......
Miscellaneous	806	......	......	806	......	......	806	......	......	806	......	......
Totals	15,024	247	201	15,035	221	186	15,442	226	186	15,533	228	198

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING JAN. 27.			WEEK ENDING FEB. 3.			WEEK ENDING FEB. 10.			WEEK ENDING FEB, 17.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western..............	3,694	100	35	3,641	102	35	3,630	110	36	3,726	100	36
New York Central and Harlem.........	2,855	4	48	2,837	4	113	2,823	4	100	2,863	4	105
New York, Ontario and Western.................	1,625	36	......	1,616	40	......	1,623	40	......	1,652	37	....
New York, Susquehanna and Western..........	4,445	27	......	1,378	34	......	1,400	26	......	1,430	32	....
West Shore....................................	870	14	52	846	13	13	817	10	10	785	12	52
New York, New Haven and Hartford	830	......	......	864	......	......	817	......	......	826	......	....
Long Island	384	......	......	377	......	......	377	......	......	377	......	....
New Jersey Central.............................	485	10	......	500	9	......	500	9	......	500	9	....
New York and Northern	1,145	......	......	1,145	......	......	1,116	......	......	1,131	......	....
Homer Ramsdell Transportation Company.....	829	29	......	825	26	......	806	26	......	830	25	....
Delaware and Lackawanna (M. and E. Division)	595	4	......	679	4	......	679	4	......	679	4	....
Miscellaneous	806	......	......	857	......	......	857	......	......	857	......	....
Totals	15,563	224	135	15,565	232	161	15,445	259	146	15,656	223	193

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING FEB. 24.			WEEK ENDING MAR. 3.			WEEK ENDING MAR. 10.			WEEK ENDING MAR. 17.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,718	100	35	3,697	100	36	3,767	98	37	3,700	102	36
New York Central and Harlem....	2,866	4	120	2,853	4	100	2,845	4	125	2,824	4	124
New York and Ontario and Western.............	1,667	39	......	1,686	41	......	1,772	58	......	1,713	68	....
New York, Susquehanna and Western...........	1,440	30	......	1,439	26	......	1,454	25	......	1,395	24	....
West Shore....	862	12	52	935	15	66	1,000	18	46	984	19	49
New York, New Haven and Hartford	826	......	......	827	......	......	850	......	......	830	......	....
Long Island..	377	......	......	377	......	......	367	......	......	367	......	....
New Jersey Central..................................	500	10	......	431	9	......	431	9	......	431	9	....
New York and Northern	1,140	......	......	1,154	......	......	1,129	......	......	1,130	......	....
Homer Ramsdell Transportation Company.....	825	28	......	787	23	......	770	25	......	682	32	....
Delaware and Lackawanna (M. and E. Division)	679	24	......	645	3	......	645	3	......	645	3	....
Miscellaneous	857	......	......	775	......	......	775	......	......	775	......	....
Totals	15,757	247	207	15,606	221	202	15,805	240	208	15,476	261	209

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER—(*Continued*).

	WEEK ENDING MAR. 24			WEEK ENDING MAR 31.			WEEK ENDING APR. 7.			WEEK ENDING APR. 14.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,911	87	36	3,655	103	38	3,767	106	30	3,752	150	35
New York Central and Harlem	2,822	4	124	2,753	4	100	2,704	4	99	2,714	4	100
New York, Ontario and Western	1,751	63	......	1,658	62	......	1,895	82	......	1,849	108	......
New York, Susquehanna and Western	1,410	41	......	1,394	26	......	1,430	25	......	1,402	23	......
West Shore	993	20	44	978	17	48	843	22	75	884	24	78
New York, New Haven and Hartford	842	......	......	849	......	......	806	......	......	790	......	......
Long Island	367	......	......	367	......	......	366	......	......	366	......	......
New Jersey Central	431	9	......	431	9	......	483	9	......	483	9	......
New York and Northern	1,129	......	......	1,129	......	......	1,167	......	......	1,167	......	......
Homer Ramsdell Transportation Company	720	30	......	764	28	......	627	28	......	627	29	......
Delaware and Lackawanna (M. and E. Division)	645	3	.....	645	3	......	1,134	......	......	1,133	......	......
Miscellaneous	775	......	......	775	......	......	833	......	......	833	......	......
Totals	15,796	257	204	15,398	252	186	16,055	266	204	16,000	347	213

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING APRIL 21.			WEEK ENDING APRIL 28.			WEEK ENDING MAY 5.			WEEK ENDING MAY 12.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	3,972	130	34	4,000	130	34	4,036	152	35	4,198	174	36
New York Central and Harlem	2,720	4	......	2,757	4	106	2,675	4	95	2,757	4	88
New York, Ontario and Western	1,886	130	......	1,892	134	......	1,957	146	......	2,114	165	......
New York, Susquehanna and Western	1,465	29	......	1,444	21	......	1,527	19	......	1,536	45	......
West Shore	946	32	79	974	30	65	1,004	35	70	1,054	31	81
New York, New Haven and Hartford	846	......	......	849	......	......	858	......	......	870	......	......
Long Island	366	......	......	366	......	......	370	......	......	370	......	......
New Jersey Central	483	9	......	483	9	......	483	9	......	....	9	......
New York and Northern	1,167	......	......	1,167	......	......	1,318	......	......	1,309	......	......
Homer Ramsdell Transportation Co	627	29	......	627	29	......	742	55	......	742	55	......
Delaware and Lackawanna (M. and E. Division)	1,133	.....	......	1,133	......	......	1,933	......	......	1,933	......	......
Miscellaneous	833	......	......	833	......	......	830	......	......	830	......	......
Totals	16,444	363	113	16,526	357	205	17,733	420	200	17,713	483	205

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING MAY 19.			WEEK ENDING MAY 26.			WEEK ENDING JUNE 2.			WEEK ENDING JUNE 9.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	4,287	190	42	4,264	173	41	4,256	265	41	4,826	314	41
New York Central and Harlem	2,769	4	80	2,795	4	58	2,751	4	74	2,780	4	50
New York, Ontario and Western	2,030	177	......	2,007	154	......	2,058	198	......	2,386	281	......
New York, Susquehanna and Western	1,563	22	......	1,555	17	......	1,551	24	......	1,695	37	......
West Shore	1,117	44	85	1,095	36	101	1,055	49	109	1,121	49	104
New York, New Haven and Hartford	871	......	......	867	......	......	861	......	......	892	......	......
Long Island	380	......	......	378	......	......	360	......	......	360	......	......
New Jersey Central	484	9	.....	484	9	......	467	10	......	467	10	......
New York and Northern	1,347	......	......	1,334	......	......	1,134	......	......	1,300	......	......
Homer Ramsdell Transportation Co	742	55	......	742	55	......	801	55	......	801	64	......
Delaware and Lackawanna (M. and E. Division)	1,933	484	......	1,933	484	......	2,267	......	......	2,267	......	......
Miscellaneous	830	......	......	830	......	......	850	......	......	850	......	......
Totals	18,353	985	207	18,184	932	200	18,411	605	224	19,745	759	195

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING JUNE 16.			WEEK ENDING JUNE 23.			WEEK ENDING JUNE 30.			WEEK ENDING JULY 7.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	4,657	243	40	4,554	244	37	4,674	302	34	4,586	305	31
New York Central and Harlem	2,778	4	50	2,640	4	58	2,526	4	69	2,411	3	91
New York, Ontario and Western	2,354	218	......	2,227	223	......	2,332	295	......	2,657	330	....
New York, Susquehanna and Western	1,660	22	......	1,594	18	......	1,645	23	......	1,620	28	....
West Shore	1,124	41	106	1,106	45	106	1,136	54	92	1,139	51	542
New York, New Haven and Hartford	892	......	......	875	......	......	880	......	......	891	......	....
Long Island	350	......	......	338	......	......	336	......	......	300	......	....
New Jersey Central	467	10	......	467	10	......	467	10	......	403	8	....
New York and Northern	1,326	......	......	1,344	......	......	1,327	......	......	1,213	......	....
Homer Ramsdell Transportation Co.	801	64	......	801	64	......	801	64	......	832	60	....
Delaware and Lackawanna (M. and E. Division)	2,267	......	......	2,267	......	......	2,267	......	......	2,100	......	....
Miscellaneous	850	......	......	850	......	......	850	......	......	742	......	....
Totals	19,526	602	196	19,063	608	201	19,241	752	195	18,894	785	664

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING JULY 14.			WEEK ENDING JULY 21.			WEEK ENDING JULY 28.			WEEK ENDING AUGUST 4.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	4,619	226	29	4,471	248	28	4,531	198	26	4,442	236	29
New York Central and Harlem	2,288	4	88	2,182	3	95	2,092	3	64	1,990	4	106
New York, Ontario and Western	2,668	259	......	2,358	230	......	2,214	175	......	2,490	308	......
New York, Susquehanna and Western	1,640	27	......	1,610	22	......	1,645	17	......	1,590	26	......
West Shore	1,140	48	546	1,086	47	536	1,047	44	500	1,018	45	265
New York, New Haven and Hartford	889	......	......	866	......	......	840	......	......	791	......	......
Long Island	285	......	......	267	......	......	263	......	......	256	......	......
New Jersey Central	403	8	......	403	8	......	403	8	......	387	8	......
New York and Northern	1,213	......	......	1,213	......	......	1,213	......	......	1,137	......	......
Homer Ramsdell Transportation Co	832	60	......	832	60	......	832	60	......	832	60	......
Delaware and Lackawanna (M. and E. Division)	2,100	......	......	2,100	......	......	2,100	......	......	1,629	......	......
Miscellaneous	742	......	......	742	......	......	742	......	......	742	......	......
Totals	18,819	632	663	18,130	618	659	17,922	505	590	17,304	687	400

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Continued*).

	WEEK ENDING AUG. 11.			WEEK ENDING AUG. 18.			WEEK ENDING AUG. 25.			WEEK ENDING SEPT. 1.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	4,471	208	28	4,128	172	35	4,076	169	7	3,996	172	18
New York Central and Harlem	1,384	3	73	2,034	3	28	2,158	3	33	2,081	3	42
New York, Ontario and Western	2,579	300	......	2,204	179	......	2,119	184	......	2,150	138	......
New York, Susquehanna and Western	1,616	23	......	1,496	20	......	1,438	16	......	1,404	16	......
West Shore	946	44	92	884	34	96	858	38	110	841	35	125
New York, New Haven and Hartford	819	......	......	755	......	......	746	......	......	722	......	......
Long Island	264	......	......	264	......	......	264	......	......	264	......	......
New Jersey Central	387	8	......	387	8	......	387	8	......	387	8	......
New York and Northern	1,137	......	......	1,137	......	......	1,137	......	......	1,137	......	......
Homer Ramsdell Transportation Company	832	60	......	832	60	......	832	60	......	832	60	......
Delaware and Lackawanna (M. and E. Division)	1,629	......	......	1,629	......	......	1,629	......	......	1,629	......	......
Miscellaneous	742	......	......	742	......	......	742	......	......	742	......	......
Totals	16,886	646	193	16,492	476	159	16,386	478	150	16,185	432	185

DAILY AVERAGE RECEIPTS IN NEW YORK, PER WEEK, OF CANS OF FORTY QUARTS EACH OF MILK, CONDENSED MILK AND CREAM, AS TAKEN FROM THE MILK REPORTER — (*Concluded*).

	WEEK ENDING SEPT. 8.			WEEK ENDING SEPT. 15.			WEEK ENDING SEPT. 22.			WEEK ENDING SEPT. 29.		
	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.	Milk.	Cream.	Condensed milk.
New York, Lake Erie and Western	4,275	200	32	4,144	139	31	4,155	136	31	3,992	99	33
New York Central and Harlem	2,097	4	42	2,154	4	59	2,149	4	64	2,320	4	61
New York, Ontario and Western	2,078	164	......	2,114	130	.....	2,151	111	......	2,170	73	....
New York, Susquehanna and Western	1,407	14	......	1,415	17	......	1,398	16	......	1,379	11	....
West Shore	867	43	88	878	31	79	887	27	79	840	20	....
New York, New Haven and Hartford	743	......	......	748	......	......	765	......	......	744	......	....
Long Island	292	......	......	292	......	......	292	......	......	292	......	....
New Jersey Central	334	7	......	334	7	......	334	7	......	334	7	....
New York and Northern	750	......	......	750	......	......	749	......	......	749	......	....
Homer Ramsdell Transportation Co.	821	40	......	821	40	......	821	40	......	821	40	....
Delaware and Lackawanna (M. and E Division)	1,500	......	......	1,500	......	......	1,500	......	......	1,500	......	....
Miscellaneous	767	......	......	767	......	......	767	......	......	767	......	....
Totals	15,921	472	162	15,917	368	169	15,968	341	174	15,908	254	173

TOTAL RECEIPTS OVER ALL ROADS FOR THE YEAR ENDING SEPTEMBER 30, 1890.

	Cans of milk.	Cans of cream.	Cans of condensed milk.	Estimated value, freight included.	Average market price to producers.	Plat-form price.
					Cents.	
October	505,478	6,806	5,694	$900,000	2⅝	$1 35
November	495,680	7,469	5,677	970,000	3	1 75
December	483,680	7,311	6,014	1,000,000	3¼	1 65
January	503,374	6,948	6,001	1,020,000	3¼	1 60
February	464,946	7,035	5,613	950,000	3¼	1 50
March	510,842	7,764	6,273	1,000,000	3	1 45
April	519,257	10,074	6,273	1,000,000	2½	1 25
May	588,736	16,492	6,394	1,100,000	2	1 00
June	593,838	20,615	5,458	1,120,000	2	1 10
July	584,623	19,814	5,911	1,075,000	2	1 30
August	530,902	16,517	5,153	1,000,000	2½	1 50
September	502,938	10,377	4,906	950,000	2½	1 50
Totals	6,285,294	137,322	69,367	$12,085,000	31⅞	....

REPORT ON VINEGAR.

During the year there has not been as much done toward enforcing the law relating to adulteration of vinegar as would have been done if the appropriation had been sufficient to permit me to do all that I deemed necessary, and that ought to have been done in order to properly protect the consumers of this product.

Early in the year, after having a consultation with you, it was decided that the portion of the appropriation that you could allot to the second division, would permit of but one expert being detailed to the duty of inspecting vinegar, and the amount so allotted has proved to be insufficient to keep the expert detailed to do this work, on that duty all of the year, in fact, he has only done ten and one-half months service on vinegar.

In order to accomplish as much as possible I detailed two of the State experts to accompany each other, instructing one to inspect the milk and the other to inspect the vinegar found in the different stores visited. By this means the vinegar expert could act as second witness in prosecutions brought for violating the milk laws, and the milk expert could act as second witness in prosecutions for violating the vinegar laws.

Under this arrangement the work has progressed very satisfactorily, and a great deal has been accomplished, and the adulteration of vinegar has been greatly reduced during the year.

DISPOSITION OF CASES REMAINING UNTRIED SEPTEMBER 30, 1889.

Case number.	NAMES.	Called for trial.	Court.	City.	Result.	Fined.
D. D. 2	The People v. Meyer	October 21, 1889	Special Sessions	New York	Pleaded guilty	$50 00
D. D. 3	The People v. Sullivan	October 12, 1889	Special Sessions	Brooklyn	Pleaded guilty	50 00
D. D. 5	The People v. Bahrenberg	November 19, 1889	Special Sessions	Brooklyn	Convicted	50 00
D. D. 6	The People v. Keller *	September 30, 1889	Special Sessions	Brooklyn	Pleaded guilty	50 00
D. D. 7	The People v. Boylan	October 21, 1889	Special Sessions	New York	Pleaded guilty	50 00
D. D. 8	The People v. Fitzgerald	October 28, 1889	Special Sessions	New York	Pleaded guilty	50 00
D. D. 9	The People v. O'Connor	October 28, 1889	Special Sessions	New York	Convicted	50 00
D. D. 11	The People v. Heide	October 21, 1889	Special Sessions	New York	Pleaded guilty	50 00
D. D. 12	The People v. Von Lubken	October 21, 1889	Special Sessions	New York	Pleaded guilty	50 00

* Sentenced October 30, 1889.

The foregoing statement, representing nine cases remaining untried as reported to you September 30, 1889, shows the following result: Nine convicted at Special Sessions; fined $450.

The following statement represents prosecutions commenced under chapter 515, Laws of 1889, relating to the sale of adulterated vinegar and the present status of the cases:

BOTTLE No. 13 D. D.

THE PEOPLE *v.* EDESHEIMER.

Jefferson Market Police Court, New York.

Warrant issued March 13, 1890; answered to March fourteenth; adjourned to seventeenth, to twenty-first, to twenty-eighth, and to April first, and dismissed. Case taken before grand jury June eighteenth, and indicted.

Counsel, LeRoy S. Gove.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 119.

THE PEOPLE *v.* O'CONNOR.

Yonkers Police Court, Yonkers, N. Y.

Warrant issued September 19, 1890; answered to September twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-sixth; adjourned to October twentieth.

Counsel, Arthur J. Burns.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 120.

THE PEOPLE *v.* DRURY.

Yonkers Police Court, Yonkers, N. Y.

Warrant issued September 19, 1890; answered to September twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-sixth; adjourned to October seventeenth.

Counsel, A. J. Burns.

Witnesses: J. J. Sorogan, W. W. Meeteer, and J. F. Geisler, chemist.

BOTTLE No. 121.

THE PEOPLE *v.* DELEHANTY.

Yonkers Police Court, Yonkers, N. Y.

Warrant issued September 19, 1890; answered to September twentieth; held to bail for trial at Special Sessions. Called for trial September twenty-sixth; adjourned to October tenth.

Counsel, A. J. Burns.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 35.

THE PEOPLE *v.* STEAHL.

Tombs Police Court, New York.

Warrant issued September 3, 1890; answered to September fourth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined fifty dollars.

Counsel, C. D. Olendorf.

Witnesses: J. J. Sorogan, J. P. Mattoon, and J. F. Geisler, chemist.

BOTTLE No. 36.

THE PEOPLE *v.* BETCH.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Pleaded guilty. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 123.

THE PEOPLE *v.* BIESLERFIELD.

Yorkville Police Court, New York.

Warrant issued September 3, 1890; answered to September fifth; held to bail for trial at General Sessions.

Witnesses: J. J. Sorogan, Arch. D. Clark, and J. F. Geisler, chemist.

BOTTLE No. 125.

THE PEOPLE *v.* SEEBACK.

Yorkville Police Court, New York.

Warrant issued September 3, 1890; answered to September fifth; held to bail for trial at General Sessions.

Witnesses: J. J. Sorogan, Arch. D. Clark, and J. F. Geisler, chemist.

BOTTLE No. 37.

THE PEOPLE *v.* REITHAL.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Tried. Convicted. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 38.

THE PEOPLE *v.* GUELLICK.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Pleaded guilty. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 39.

THE PEOPLE *v.* SENGSTACKEN.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Pleaded guilty. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 40.

THE PEOPLE *v.* ALBRECHT.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth. Pleaded guilty. Fined five dollars.*

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE NO. 28.

THE PEOPLE *v.* GENIER.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Pleaded guilty. Fined fifty dollars.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 29.

THE PEOPLE *v.* HOPKE.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh; adjourned to October fourteenth.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 26.

THE PEOPLE *v* AHNEMANN.

Justice Goetting's Police Court, Brooklyn, N. Y.

Warrant issued September 13, 1890; answered to September eighteenth; held to bail for trial at Special Sessions. Called for trial September twenty-seventh. Pleaded guilty. Fined fifty dollars.

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*The judge seems to have been unacquainted with the provisions of the law when this case was before him.

Counsel, A. C. Salmon.

Witnesses: J. J. Sorogan, E. S. Wilson, and J. F. Geisler, chemist.

BOTTLE No. 41.

THE PEOPLE v. WENDT.

Tombs Police Court, New York.

Warrant issued September 3, 1890; answered to September fourth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Pleaded guilty. Fined fifty dollars.

Witnesses: J. J. Sorogan, F. W. Swanson, and J. F. Geisler, chemist.

BOTTLE No. 46.

THE PEOPLE v. MCHUGH.

Yorkville Police Court, New York.

Warrant issued September 3, 1890; answered to September fifth; held to bail for trial at Special Sessions. Called for trial September twenty-fourth. Tried. Convicted. Fined fifty dollars.

Counsel, C. D. Olendorf.

Witnesses: J. J. Sorogan, F. W. Swanson, and J. F. Geisler, chemist.

The following is a detailed report of the work performed in this department between September 30, 1889, and September 30, 1890, in prosecuting the law relating to the sale of vinegar:

Joseph J. Sorogan, expert, employed in the above service 260 days:

Number of days in court	36
Number of days obtaining evidence	20
Number of days on special duty	8
Number of days inspecting vinegar in stores	196
Total number of days	260

Number of samples purchased and taken	34
Number of samples delivered to chemists	34
Number of appearances in cases	78
Number of complaints made	17
Number of wholesale dealers and manufacturers inspected,	31
Number of stores inspected	1,840
Total number of vinegar inspections	1,871
Estimated number of miles traveled	4,450

The result of the seventeen preceding prosecutions for violation of the vinegar law commenced between September 30, 1889, and September 30, 1890, were as follows:

Convicted at Special Sessions	10
Awaiting trial at Special Sessions	4
Awaiting trial at General Sessions	3
Total	17
Total fines imposed in above cases	$455,000

J. F. Geisler:

Number of analyses of vinegar samples	27
Number of appearances in cases	46
Number of days in court	19

TOTAL (*Vinegar*).

Number of days expert	260
Number of days in court	55
Number of days obtaining evidence	20
Number of days special duty	8
Number of days inspecting vinegar	196
Number of samples purchased and taken	34
Number of samples delivered to chemist	34
Number of appearances in cases	124
Number of complaints made	17
Number of wholesale dealers and manufacturers inspected,	31
Number of stores inspected	1,840

Number of vinegar inspections	1,871
Number of cases prosecuted	17
Number of cases disposed of	10
Number of cases convicted	10
Number of cases not disposed of	7
Amount of fines imposed in above cases	$455 00

The final result of prosecutions under the laws relating to oleomargarine, adulterated milk and vinegar, for the year ending September 30, 1890, were as follows:

Oleomargarine cases remaining untried September 30, 1889,	4
Milk cases remaining untried September 30, 1889	2
Vinegar cases remaining untried September 30, 1889	8
Total cases remaining untried September 30, 1890	14

Oleomargarine cases prosecuted during the year ending September 30, 1890	8
Milk cases prosecuted during the year ending September 30, 1890	147
Vinegar cases prosecuted during the year ending September 30, 1890	17
Total number of cases	186

Convicted	155
Acquitted	4
Dismissed on examination in police court	7
Remaining on calendar awaiting trial	20
Total	186

Total fines imposed during the year (vinegar)	$905
Total fines imposed during the year (oleomargarine)	650
Total fines imposed during the year (milk)	3,380
Total	$4,935

In conclusion, I am greatly pleased to state that I have been supported to the full extent of their ability by each of the State experts, chemists and counsel employed in this division of the dairy department, also by the experts detailed to assist in this division by Assistant Dairy Commissioner Tuthill, and wish to add that the district attorneys and their able assistants have forwarded our prosecutions to a favorable termination; and the judges of the different courts, in which prosecutions have been brought, have given the work of this department prompt and careful attention.

Respectfully submitted.

B. F. VAN VALKENBURGH,
Assistant New York State Dairy Commissioner.

REPORT OF F. D. TUTHILL.

Hon. J. K. BROWN, *New York State Dairy Commissioner:*

SIR.—I have the honor of submitting this, my third annual report, for the third division of the "Dairy Commission" of this State for the year ending September 30, 1890.

The department of which I am in charge has been somewhat changed since I first assumed management, and as at present constituted consists of the counties of Columbia, Delaware, Dutchess, Greene, Orange, Putnam, Rockland, Sullivan, Ulster and that part of Westchester lying north of White Plains — the butter section having been added to another division, leaves it the most prominent milk-producing district in the State.

The year just closed has been an unfavorable one for the shippers of milk. Owing to the scarcity of ice, they have labored under many disadvantages, particularly on the east side of the Shawangunk mountains, where little or none was harvested. Heretofore ice has been considered a necessity for the safe shipment of milk, but at ten and twelve dollars per ton, and milk but two cents per quart, the use of ice did not seem to be in the interest of the farmer, therefore, when no substitute could be found, abandoned springs and long-neglected milk-houses were called into use once more. Where no available spring could be secured, as a last resort the milk was sold to the creamerymen, some of whom had erected ice-machines or cold-blast refrigerators at great expense. (A few creameries were closed.)

Thus the season opened for the milk producers and shippers. The outlook seemed discouraging. The first part of the summer being unusually cool, milk was shipped to the New York market in fair condition. As the summer advanced and the temperature increased, the springs failed to keep the milk in proper condition, and many cans of milk were returned to the shipper the day following each consignment, so that it was nothing unusual for the shipper to leave five or six cans of milk at the station for shipment, and find there from one to three that had been returned to him.

About this time different preparations for "preserving" milk were extensively advertised in the agricultural papers, which the agents claimed would keep milk or cream sweet and without change for from three to five days. Also that it was not only harmless but beneficial to health. A number of dealers in the city markets, a few creamerymen, and possibly some farmers were induced to use it. Upon learning that such compounds were being used, I obtained samples, had them analyzed; they were pronounced unhealthful by the chemists, which agreed with the views of Dr. Clark, our chemist at Albany. After consulting with you concerning this feature of milk adulteration, I then directed the experts to take certain samples of milk to the chemist for analysis, and by so doing discovered that three creameries were using these preparations for preserving their milk. On complaints being issued all three were summoned before the proper magistrates, and each pleaded guilty and were fined; one seventy-five dollars, the other two twenty-five dollars each.

In the early part of the summer I was informed that the "Union Dairy Company," at Searsville in this county, was carrying on business at their creamery in a "doubtful" way, no admission to the inside of the building being permitted to any but the attachés, that the machinery could be heard working at all hours and something was being manufactured in seclusion. It was also stated that it would be difficult to obtain admittance. Two experts were sent, with instructions, to remain until they could effect an entrance, and obtain a full knowledge of the inside workings of this "factory." They drove from Goshen on the fourth day of June, and on their arrival at the village immediately proceeded to the building. The first question from the employés who soon appeared, was: Have you, gentlemen, any business here? Upon being assured they had, they were then asked: Where do you belong? To the State of New York was the reply. At this they hesitated for a moment, then proceeded to open a large ice-box, and cans partly filled with cream were brought out, each one examined and set aside. This done, the foreman (as afterward learned) informed them that they could not remain in the building, as they had a secret method which they did not wish to disclose, and the proprietors had given positive orders to allow no person inside, except he produced the proper authority.

This the experts soon exhibited. They were then conducted through the back way and a blind door where three evaporators were in motion. The foreman stated that after the cream was removed from the milk, the skim milk was then evaporated to a certain consistency and mixed with the cream (thirteen quarts of the evaporated milk to twenty-seven quarts of cream.) He further stated that the parties to whom they consigned the mixture knew what it was, how prepared, and preferred it to pure cream, as it hardened the cream and it stood up much better. The cans of cream that were taken out of the ice-box on the arrival of the experts were then measured, and each filled with the evaporated milk, thirteen quarts evaporated to twenty-seven quarts of cream.

ANALYSIS OF PURE MILK.

Milk of a standard quality is required to contain not less than three per cent of fat. Since this standard was fixed by law, a new method of analysis (Adams') has been adopted by the chemists, which is said to obtain a larger per cent of fat than the one used by the same chemists at the time the present standard was established. At your suggestion a number of samples of milk, of known purity, were taken from dairies in different counties in this division to be analyzed and the per cent of fat to be determined by both the Wanklyn and Adams' method in order to show the increase, if any. I herewith also submit a monthly report of analyses of milk taken from a herd of thirty cows, kept and cared for ordinarily, during the year 1890:

MONTHS.	Water.	Total solids.	Fat.	Sugar and caseine.	Salts.
January	87.074	12.926	4.297	7.861	.768
February	86.977	13.023	4.396	7.899	.728
March	86.614	13.386	4.212	8.414	.760
April	87.094	12.906	4.110	8.044	.752
May	87.200	12.800	3.937	8.135	.728
June	87.422	12.578	3.697	8.160	.721
July	87.546	12.454	3.878	7.836	.740
August	87.155	12.845	3.917	8.168	.760
September	87.255	12.745	3.917	8.088	.740
October	87.045	12.955	4.021	8.182	.752
November	87.192	12.808	4.001	7.037	.770
December	......	......	......	......	.....

AERATION OF MILK.

The theory that thorough aeration of milk, as soon as drawn from the cow, will remove all odor and taint, keep milk in better condition and increase the quantity of both butter and cheese, is new and worthy of further trial.

The idea advanced by you that milk intended for New York city and vicinity could, by thorough aeration only, be delivered in prime condition was subjected to a fair test during the month of August last. I aerated one can of evening's milk daily and sent it direct to the New York market with other milk which had been cooled by ice. Notwithstanding the aerated milk kept as well as the iced milk, it slightly churned during the warmest weather.

I am convinced that milk so treated could be shipped with safety during a part of the year, yet I think the temperature ought to be reduced during the warm season.

The following tables give a detailed report of work performed by each employé in this division of the department between September 30, 1889, and October 1, 1890, in enforcing the laws relating to the sale of adulterated milk and butter:

Report of work performed by W. W. Meeteer:

Number of days in court	6
Number of days inspecting milk and butter	35
Number of days inspecting herds	....
Number of days obtaining evidence	14
Number of days special duty	4
Total	59

Number of creameries inspected as to condition	5
Number of milk peddlers inspected	26
Number of stores, boarding-houses, hotels and restaurants inspected	420
Number of stables inspected	....
Number of cows inspected	....
Number of creamerymen's milk inspected on delivery at boat and railroad depots	53
Number of dairymen's milk inspected on delivery at creameries and railroad depots	135

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	1,932
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	545
Number of cans peddlers' milk inspected	51
Number of cans store milk inspected	14
Total number cans of milk inspected	2,542

Number of samples milk delivered to chemist	33
Number of samples butter delivered to chemist	3
Number of milk complaints made	2
Number of appearances in milk cases	3
Number of oleomargarine complaints made	1
Number of appearances in oleomargarine cases	9
Estimated number of miles traveled	5,050

Report of work performed by A. D. Clark:

Number of days in court	10
Number of days inspecting milk and butter	21
Number of days inspecting herds	
Number of days obtaining evidence	12
Number of days special duty	4
Total number of days	47

Number of creameries inspected as to condition	
Number of milk peddlers inspected	
Number of stores, boarding-houses, hotels and restaurants inspected	89
Number of stables inspected	
Number of cows inspected	
Number of creamerymen's milk inspected on delivery at boat and railroad depots	29
Number of dairymen's milk inspected on delivery at creameries and railroad depots	110

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	1,049
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	412

Number of cans peddlers' milk inspected	....
Number of cans store milk inspected	....
Total number of cans of milk inspected	1,461

Number of samples of milk delivered to chemist	23
Number of samples butter delivered to chemist	3
Number of milk complaints made	4
Number of appearances in milk cases	4
Number of oleomargarine complaints made	3
Number of appearances in oleomargarine cases	10
Estimated number of miles traveled	2,500

Report of work performed by O. C. Griffis:

Number of days in court	24
Number of days inspecting milk and butter	154
Number of days inspecting herds	....
Number of days obtaining evidence	25
Number of days special duty	26
Total number of days	229

Number of creameries inspected as to condition	17
Number of milk peddlers inspected	29
Number of stores, boarding-houses, hotels and restaurants inspected	70
Number of stables inspected	....
Number of cows inspected	....
Number of creamerymen's milk inspected on delivery at boat and railroad depots	47
Number of dairymen's milk inspected on delivery at creameries and railroad depots	511

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	1,978
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	1,118
Number of cans peddlers' milk inspected	102
Number of cans store milk inspected	12
Total number of cans of milk inspected	3,210

Number of samples milk delivered to chemist	30
Number of samples butter delivered to chemist	....
Number of milk complaints made	10
Number of appearances in milk cases	18
Number of oleomargarine complaints made	....
Number of appearances in oleomargarine cases	....
Estimated number of miles traveled	12,100

Report of work performed by T. C. DuBois:

Number of days in court	47
Number of days inspecting milk and butter	134
Number of days inspecting herds	1
Number of days obtaining evidence	48
Number of days special duty	66
Total number of days	296

Number of creameries inspected as to condition	49
Number of milk peddlers inspected	112
Number of stores, boarding-houses, hotels and restaurants inspected	82
Number of stables inspected	1
Number of cows inspected	14
Number of creamerymen's milk inspected on delivery at boat and railroad depots	107
Number of dairymen's milk inspected on delivery at creameries and railroad depots	1,473

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	4,633
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	4,946
Number of cans peddlers' milk inspected	386
Number of cans store milk inspected	86
Total number cans of milk inspected	10,051

Number of samples milk delivered to chemist	93
Number of samples butter delivered to chemist	....
Number of milk complaints made	36
Number of appearances in milk cases	60

Number of oleomargarine complaints made	....
Number of appearances in oleomargarine cases	....
Estimated number of miles traveled	16,900

Report of work performed by G. W. Price:

Number of days in court	31
Number of days inspecting milk and butter	162
Number of days inspecting herds	1
Number of days obtaining evidence	49
Number of days special duty	62
Total number of days	305

Number of creameries inspected as to condition	62
Number of milk peddlers inspected	113
Number of stores, boarding-houses, hotels and restaurants inspected	70
Number of stables inspected	5
Number of cows inspected	120
Number of creamerymen's milk inspected on delivery at boat and railroad depots	91
Number of dairymen's milk inspected on delivery at creameries and railroad depots	1,757

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	3,862
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	5,711
Number of cans peddlers milk inspected	388
Number of cans store milk inspected	74
Total number cans of milk inspected	10,035

Number of samples milk delivered to chemist	48
Number of samples butter delivered to chemist	....
Number of milk complaints made	4
Number of appearances in milk cases	22
Number of oleomargarine complaints made	....
Number of appearances in oleomargarine cases	2
Estimated number of miles traveled	15,325

Report of work performed by R. H. Palmer:

Number of days in court	1
Number of days inspecting milk and butter	54
Number of days inspecting herds	....
Number of days obtaining evidence	4
Number of days special duty	19
Total number of days	78
Number of creameries inspected as to condition	23
Number of milk peddlers inspected	1
Number of stores, boarding-houses, hotels and restaurants inspected	....
Number of stables inspected	5
Number of cows inspected	389
Number of creamerymen's milk inspected on delivery at boat and railroad depots	4
Number of dairymen's milk inspected on delivery at creameries and railroad depots	745
Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	394
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	1,952
Number of cans peddlers' milk inspected	2
Number of cans store milk inspected	....
Total number cans of milk inspected	2,348
Number of samples milk delivered to chemist	10
Number of samples butter delivered to chemist	....
Number of milk complaints made	....
Number of appearances in milk cases	1
Number of oleomargarine complaints made	....
Number of appearances in oleomargarine cases	....
Estimated number of miles traveled	4,520

Total amount of work performed in the third division:

Number of days in court	119
Number of days inspecting milk and butter	560
Number of days inspecting herds	2

Number of days obtaining evidence	152
Number of days special duty	181
Total number of days	1,014

Number of creameries inspected as to condition	156
Number of milk peddlers inspected	281
Number of stores, boarding-houses, hotels and restaurants inspected	587
Number of stables inspected	12
Number of cows inspected	523
Number of creamerymen's milk inspected on delivery at boat and railroad depots	331
Number of dairymen's milk inspected on delivery at creameries and railroad depots	4,731

Number of cans creamerymen's milk inspected on delivery at boat and railroad depots	13,848
Number of cans dairymen's milk inspected on delivery at creameries and railroad depots	14,684
Number of cans peddlers' milk inspected	929
Number of cans store milk inspected	186
Total number of cans of milk inspected	29,647

Number of samples milk delivered to chemist	237
Number of samples butter delivered to chemist	6
Number of milk complaints made	56
Number of appearances in milk cases	108
Number of oleomargarine complaints made	4
Number of appearances in oleomargarine cases	21
Estimated number of miles traveled	56,395

OLEOMARGARINE.

While no manufactory of oleomargarine exists in this division, yet it is a fact that during the summer season it is sold and secretly delivered in small quantities among the boarding-houses at the brickyards along the Hudson river.

With this knowledge before me, I detailed two experts about the middle of April last, to ferret out, if possible, the source from which this article came into this county, and who was handling it. They soon discovered that "oleo" was brought to Newburgh by boat in packages encased in burlap, and a private mark upon each one; also, that it was invariably called for by one certain party, and delivered by him to the said boarding-houses. The experts followed this "agent" for a couple of days to be able to locate the houses where it was delivered; and early the next morning, while waiting to see the delivery of another lot which arrived the night previous, their attention was directed to a couple of canvas-covered tubs being unloaded in front of the store of a "dealer in country produce," on Front street, Newburgh. They at once visited the store, and on going into the cellar found the two packages secreted behind a lot of empty barrels. They were from a Chicago firm, and one package was broken, from which a sample was taken for analysis, and proved to be oleomargarine.

Mr. Morrison, the merchant in whose possession the goods were found, was thereafter arraigned, pleaded guilty, and fined $100.

Nearly six weeks after three experts were located temporarily at Haverstraw, in Rockland county, and while there obtained samples from some of the brickyard boarding-houses, at Grassy point and vicinity, which upon analysis proved to be "oleo." These goods also came by boat to Haverstraw, and were handled by one Riley, an expressman who sometimes would drive eight and ten miles in a roundabout way to deliver a single package. Four complaints were made and but three arrests, as Riley died soon thereafter. George Wheeler, hotel keeper, was convicted and fined fifty dollars, or thirty days in jail; Lewis Villeau, boarding-house keeper, arrested, pleaded guilty and fined fifty dollars, or thirty days in jail; Benjamin Moran, boarding-house keeper, convicted and fined fifty dollars, or ten days in jail.

The subjoined statement represents the prosecutions during the year ending September 30, 1890, for violations of chapter 183, of Laws of 1885, and amendments thereof, relating to the sale of adulterated milk and butter:

CASE No. 1762.

The People *v.* Morrison.

Supreme Court, Justice Cullen, Goshen, N. Y.

Summons issued January 18, 1890; not answered. Case called June 18, 1890; no defense. Judgment for $100 ordered by the court.

Witnesses: O. C. Griffis, J. R. Wheeler, and J. F. Geisler, chemist.

Counsel, George W. Greene.

CASE No. 1763.

THE PEOPLE v. LADUE (WM. L.).

Court of Special Sessions, Justice Emans, Johnsville.

Warrant issued April 15, 1890; answered to April 15, 1890. Pleaded not guilty. Tried without a jury, and acquitted by the court.

Witnesses: O. C. Griffis, and J. F. Geisler, chemist.

Counsel, J. F. Schlosser.

CASE No. 1764.

THE PEOPLE v. CHRISTIAN.

Court of Special Sessions, Justice Rogers, Brinkerhoff.

Warrant issued March 20, 1890; answered to March 21, 1890. Pleaded guilty; sentenced suspended by the court.

Witnesses: O. C. Griffis, and J. F. Geisler, chemist.

Counsel, J. F. Schlosser.

CASE No. 1765.

THE PEOPLE v. HUSTIS.

Court of Special Sessions, Justice Rogers, Brinkerhoff.

Warrant issued March 18, 1890; answered to March 19, 1890. Pleaded guilty; sentence suspended by the court.

Witnesses: O. C. Griffis, and J. F. Geisler, chemist.

Counsel, J. F. Schlosser.

CASE No. 1766.

THE PEOPLE v. CARR.

Not prosecuted as milk was sold to the defendant by W. T. Matthews, and Carr used as witness against Matthews.

CASE No. 1767.

THE PEOPLE *v.* KITZ.

Court of Special Sessions, Justice Atwater.

Warrant issued March 13, 1890; answered to March 13, 1890. Pleaded guilty. Sentence suspended.

Witnesses, O. C. Griffis, and J. F. Geisler, chemist.

CASE No. 1768.

THE PEOPLE *v.* MATTHEWS.

Court of Special Sessions, Justice Coleman, Goshen.

Warrant issued April 10, 1890; answered to April 14, 1890. Examination held and fined fifty dollars.

Witnesses: W. W. Meeteer, O. C. Griffis, and J. F. Geisler, chemist.

Counsel, W. H. Wyker.

CASE No. 1769.

THE PEOPLE *v.* LADUE (JOHN W.).

Court of Special Sessions, Justice Emans, Johnsville.

Warrant issued April 15, 1890; answered to April 15, 1890. Pleaded not guilty. Tried without jury, and discharged by the court.

Witnesses: O. C. Griffis, and J. F. Geisler, chemist.

Counsel, J. F. Schlosser.

CASE No. 1770.

THE PEOPLE *v.* JORDAN.

Supreme Court, Orange county, Justice Barnard.

Summons served October 25, 1889; returnable November 15, 1889. Pleaded guilty November 15, 1889. Paid penalty, $100 and costs.

Witnesses: O. C. Griffis, George W. Price, and J. F. Geisler, chemist.

Counsel, Geo. W. Greene.

Remarks.— Money received in above action was applied as prescribed in section 15, chapter 577, Laws of 1886.

CASE No. 1775.

THE PEOPLE *v.* J. FRANK WHITTAKER.

Court of Special Sessions, Justice Coleman, Goshen.

Warrant issued October 8, 1889; answered to October 9, 1889; adjourned to October 19, 1889. Pleaded not guilty; tried by jury and acquitted.

Witnesses: T. C. DuBois, Geo. W. Price, and Chas. M. Stillwell, chemist.

Counsel, W. H. Wyker.

CASE No. 1779.

THE PEOPLE *v.* GREEN.

Court of Special Sessions, Justice Wyker, Goshen.

Warrant issued November 23, 1889; answered to November 23, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and J. F. Geisler, chemist.

CASE No. 1781.

THE PEOPLE *v.* LOWE.

Supreme Court, Orange county, Justice Barnard.

Summons served October 25, 1889; returnable November 15, 1889. Pleaded guilty November 10, 1889. Paid penalty, $100 and ccsts.

Witnesses: A. D. Clark, O. C. Griffis, and J. F. Geisler, chemist.

Counsel, Geo. W. Greene.

Remarks.— Money received in above action was applied as prescribed in section 15, chapter 577, Laws of 1886.

CASE No. 1784.

THE PEOPLE *v.* DECKER.

Court of Special Sessions, Justice McBride, Dwaarskill.

Warrant issued November 20, 1889; answered to November 20, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and C. M. Stillwell, chemist.

Remarks.— Fine remitted by the court.

CASE No. 1786.

THE PEOPLE *v.* BURGER.

Court of Special Sessions, Justice McBride, Dwaarskill.

Warrant issued November 20, 1889; answered to November 21, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and C. M. Stillwell, chemist.

Remarks.— Fine remitted by the court.

CASE No. 1787.

THE PEOPLE *v.* WRITER.

Court of Special Sessions, Justice Ketcham, Otisville.

Warrant issued December 3, 1889; answered to December 3, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and J. F. Geisler, chemist.

CASE No. 1850.

THE PEOPLE *v.* BECK.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

Remarks.— George H. Beck died at Washington, D. C., April 16, 1890.

CASE No. 1851.

THE PEOPLE v. BENNETT.

Court of Special Sessions, Recorder Smith, Poughkeepsie.

Warrant issued March 21, 1890; answered to March 21, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 1852.

THE PEOPLE v. CARROLL.

Court of Special Sessions, Justice Brill, Kingston.

Warrant issued March 12, 1890; answered to March 12, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark chemist.

CASE No. 1853.

THE PEOPLE v. SMITH.

Court of Special Sessions, Justice Rosencrans, Florida.

Warrant issued April 9, 1880; answered to April 11, 1890. Pleaded guilty. Fined twenty-five dollars and fine remitted by the court.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 1854.

THE PEOPLE v. HOWELL.

Court of Special Sessions, Justice Crist, Chester.

Warrant issued March 5, 1890; answered to March 7, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 1855.

The People *v.* Mowers.

Court of Special Sessions, Justice Merclane, Saugerties.

Warrant issued February 18, 1890; answered to February 19, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and R. D. Clark, chemist.

CASE No. 1856.

The People *v.* Zeigler.

Court of Special Sessions, Justice Merclane, Saugerties.

Warrant issued February 18, 1890; answered to February 19, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and R. D. Clark, chemist.

CASE No. 1857.

The People *v.* Ellsworth.

Court of Special Sessions, Justice Merclane, Saugerties.

Warrant issued February 18, 1890; answered to February 19, 1880. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and R. D. Clark, chemist.

CASE No. 1859.

The People *v.* Phillips.

Court of Special Sessions, Justice Wood, Haverstraw.

Warrant issued April 15, 1890; answered to April 15, 1890. Pleaded guilty. Fined thirty dollars.

Witnesses: Geo. W. Price, T. C. DuBois, and J. F. Geisler, chemist.

CASE No. 1893.

THE PEOPLE *v.* PIERSON.

Court of Special Sessions, Justice Carpenter, Norwich.

Warrant issued May 20, 1890; answered to May 20, 1890. Pleaded guilty and sentence suspended by the court.

Witnesses: W. W. Meeteer, O. C. Griffis, and J. F. Geisler, chemist.

CASE No. 1908.

THE PEOPLE *v.* HOHL.

Court of Special Sessions, Justice Stark, Callicoon.

Warrant issued June 10, 1890; answered to June 11, 1890. Pleaded not guilty. Tried by jury. Convicted and fined twenty-five dollars.

Witnesses: O. C. Griffis, Mary A. Smith, and J. F. Geisler, chemist.

Counsel, Jas. I. Curtis.

CASE No. 2149.

THE PEOPLE *v.* BURROWS.

Court of Special Sessions.

Warrant issued February 5, 1890; answered to March 27, 1890. Pleaded not guilty. Discharged by the court.

Witnesses: O. C. Griffis, and J. F. Geisler, chemist.

CASE No. 2150.

THE PEOPLE *v.* LAWRENCE & DURLAND.

Court of Special Sessions, Justice Brooks, Washingtonville.

Warrant issued June 19, 1890; answered to June 21, 1890. Pleaded guilty. Fined fifty dollars.

Witnesses: O. C. Griffis, F. D. Tuthill, and J. F. Geisler, chemist.

CASE No. 2157.

The People *v.* Sheridan.

Court of Special Sessions, Justice Cushing, Vails Gate.

Warrant issued December 5, 1889; answered to December 6, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, Geo. W. Price, and J. F. Geisler, chemist.

CASE No. 2158.

The People *v.* Merritt.

Court of Special Sessions, Justice Lawrence, Hurley.

Warrant issued January 30, 1890; answered to February 4, 1890; adjourned to February 11, 1890. Pleaded guilty. Fined $100.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2159.

The People *v.* Armstrong.

Court of Special Sessions, Justice Alexander, Little Britain.

Warrant issued January 3, 1890; answered to January 3, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2162.

The People *v.* Denniston.

Court of Special Sessions, Justice Alexander, Little Britain.

Warrant issued January 3, 1890; answered to January 3, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2163.

THE PEOPLE *v.* WHEELER & PARKHURST.

Court of Special Sessions, Justice Wyker, Goshen.

Warrant issued March 18, 1890; answered to April 8, 1890. Pleaded guilty. Fined fifty dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2165.

THE PEOPLE *v.* GALE.

Court of Special Sessions, Justice Merclane, Saugerties.

Warrant issued February 19, 1890; answered to February 21, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark, chemist.

CASE No. 2166.

THE PEOPLE *v.* KERNAN.

Court of Special Sessions, Recorder Coffin, Hudson.

Warrant issued March 13, 1890; answered to March 13, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark, chemist.

CASE No. 2167.

THE PEOPLE *v.* DELANEY.

Court of Special Sessions, Recorder Coffin, Hudson.

Warrant issued March 13, 1890; answered to March 15, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark, chemist.

Remarks.— Fine remitted by the court.

CASE No. 2168.

THE PEOPLE *v.* BROADBELT.

Court of Special Sessions, Recorder Coffin, Hudson.

Warrant issued March 13, 1890; answered to March 13, 1890; adjourned to March 25, 1890; to April 23, 1890. Pleaded not guilty. Tried by jury and acquitted.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark, chemist.

Counsel, William M. Brownell.

CASE No. 2169.

THE PEOPLE *v.* VAN HOESEN.

Court of Special Sessions, Recorder Coffin, Hudson.

Warrant issued March 13, 1890; answered to March 13, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and R. D. Clark chemist.

CASE No. 2170.

THE PEOPLE *v.* HILL.

Court of Special Sessions, Recorder Smith, Poughkeepsie.

Warrant issued March 20, 1890; answered to March 20, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler. chemist.

CASE No. 2171.

THE PEOPLE *v.* BRIETHAUPT.

Court of Special Sessions, Justice Tremper, Rocklet.

Warrant issued January 28, 1890; answered to January 28, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2172.

THE PEOPLE *v.* BREWSTER.

Court of Special Sessions, Justice Brooks, Washingtonville.

Warrant issued January 10, 1890; answered to February 6, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2173.

THE PEOPLE *v.* BALDWIN & O'BRIEN.

Court of Special Sessions, Justice Hulse, Monroe.

Warrant issued March 25, 1890; answered to May 5, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2174.

THE PEOPLE *v.* SMITH.

Court of Special Sessions, Justice Ketcham, Otisville.

Warrant issued December 18, 1889; answered to December 18, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2175.

THE PEOPLE *v.* WHEAT & SAVAGE.

Court of Special Sessions, Justice Ketcham, Otisville.

Warrant issued December 18, 1889; answered to December 18, 1889. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2179.

The People *v.* Streit.

Court of Special Sessions, Justice Coles, Nyack.

Warrant issued April 3, 1890; answered to April 3, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: George W. Price, T. C. DuBois, and J. F. Geisler, chemist.

CASE No. 2181.

The People *v.* Springsteen.

Court of Special Sessions, Justice Case, Unionville.

Warrant issued May 22, 1890; answered to May 23, 1890. Pleaded guilty. Fined twenty-five dollars. Fine remitted by the court.

Witnesses: T. C. DuBois, George W. Price, and J. F. Geisler, chemist.

CASE No. 2182.

The People *v.* Sayer.

Court of Special Sessions, Justice Hulse, Westtown.

Warrant issued September 3, 1890; answered to September 4, 1890; adjourned to September 12, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, R. H. Palmer, and J. F. Geisler, chemist.

CASE No. 2187.

The People *v.* Miller.

Court of Special Sessions, Justice Duryea, Bullville.

Warrant issued September 2, 1890; answered to September 2, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: George W. Price, R. H. Palmer, and J. F. Geisler, chemist.

CASE No. 2189.

THE PEOPLE *v.* SLAUGHTER.

Court of Special Sessions, Justice Parks, Liberty.

Warrant issued August 28, 1890; answered to August 28, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: George W. Price, R. H. Palmer, and J. F. Geisler, chemist.

CASE No. 2195.

THE PEOPLE *v.* SHEEHAN.

Court of Special Sessions, Justice Crist, Chester.

Warrant issued September 9, 1890; answered to September 10, 1890; adjourned to September 17, 1890. Pleaded not guilty. Discharged by the court.

Witness: T. C. DuBois, and J. F. Geisler, chemist.

CASE No. 2708.

THE PEOPLE *v.* KNAPP & CO.

Court of Special Sessions, Justice King, Chester.

Warrant issued September 30, 1890; answered to September 30, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: A. D. Clark, F. D. Tuthill, and J. F. Geisler, chemist.

CASE No. 2710.

THE PEOPLE *v.* CAMPBELL HALL MILK COMPANY.

Court of Special Sessions, Justice Brooks, Washingtonville.

Warrant issued August 30, 1890; answered to August 30, 1890. Pleaded guilty. Fined seventy-five dollars.

Witnesses: A. D. Clark, F. D. Tuthill, and E. G. Love, chemist.

CASE No. 2711.

THE PEOPLE *v.* TOWER.

Court of Special Sessions, Justice Brooks, Washingtonville.

Warrant issued August 30, 1890; answered to August 30, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: A. D. Clark, F. D. Tuthill, and E. G. Love, chemist.

CASE No. 2792.

THE PEOPLE *v.* DENNIS.

Court of Special Sessions, Justice Hulse, Westtown.

Warrant issued September 3, 1890; answered to September 4, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, R. H. Palmer, and J. F. Geisler, chemist.

CASE No. 2794.

THE PEOPLE *v.* LAIN.

Court of Special Sessions, Justice Hulse, Westtown.

Warrant issued September 3, 1890; answered to September 3, 1890. Pleaded guilty. Fined twenty-five dollars.

Witnesses: T. C. DuBois, R. H. Palmer, and J. F. Geisler, chemist.

CASE No. 2893.

THE PEOPLE *v.* BALDWIN & O'BRIEN.

Court of Special Sessions, Justice Hulse, Monroe.

Warrant issued September 5, 1890; answered to September 16, 1890. Pleaded guilty. Fined fifty dollars.

Witness: T. C. DuBois, and J. F. Geisler, chemist.

CASE No. 2894.

THE PEOPLE *v.* KANE.

Court of Special Sessions, Justice Hulse, Monroe.

Warrant issued September 9, 1890; answered to September 9, 1890. Pleaded guilty. Fined fifty dollars.

Witness: T. C. DuBois, and J. F. Geisler chemist.

OLEO.

CASE No. H, 1246.

THE PEOPLE *v.* GILLMAN (SULLIVAN COUNTY).

Court of Special Sessions, Justice Roosa.

Warrant issued March 6, 1889; answered to April 3, 1889; gave bail to await action of grand jury; indicted May 28, 1889. Pleaded not guilty. Gave bail for trial at General Sessions. Case called for trial February 11, 1890.

Witnesses: W. W. Meeteer, J. R. Wheeler, and J. F. Geisler, chemist.

Counsel, T. A. Niven.

Remarks.— Tried by jury, and discharged by order of Judge Thornton, on grounds that the people failed to prove the sale of oleomargarine, as charged in the indictment.

CASE No. K, 1087.

THE PEOPLE *v.* MORRISON (STORE), NEWBURGH.

Court of Special Sessions, Justice Kelly, Goshen.

Warrant issued June 19, 1890; answered to June 19, 1890. Pleaded guilty. Fined $100.

Witnesses: A. D. Clark, George W. Price, and J. F. Geisler, chemist.

Counsel, Geo. W. Greene, Goshen.

CASE No. K, 1089.

THE PEOPLE *v.* VILLEAU (BOARDING-HOUSE).

Court of Special Sessions, Justice Woods, Haverstraw.

Warrant issued July 17, 1890; answered to July 17, 1890; adjourned to July 29, 1890; to July 31, 1890; indefinitely. Case recalled September 4, 1890. Pleaded guilty September 4, 1890. Fined fifty dollars.

Witnesses: A. D. Clark, W. W. Meeteer, and Chas. M. Stillwell, chemist.

Counsel, Wm. McCauley, Jr.

CASE No. K, 1088.

THE PEOPLE *v.* WHEELER (HOTEL), GRASSY POINT.

Court of Special Sessions, Justice Woods, Haverstraw.

Warant issued July 17, 1890; answered to July 17, 1890; adjourned to July 29, 1890; to July 31, 1890; to August 1, 1890. Pleaded not guilty. Tried by jury. Convicted and fined fifty dollars, or thirty days in jail.

Witnesses: A. D. Clark, W. W. Meeteer, and J. F. Geisler, chemist.

Counsel, Wm. McCauley, Jr.

CASE No. H, 1261.

THE PEOPLE *v.* MORAN (BOARDING-HOUSE), GRASSY POINT.

Court of Special Sessions, Justice Woods, Haverstraw.

Warrant issued July 17, 1890; answered to July 17, 1890; adjourned to July 29, 1890; to July 31, 1890. Pleaded not guilty. Convicted. Fined fifty dollars, or ten days in jail.

Witnesses: W. W. Meeteer, A. D. Clark, and C. M. Stillwell, chemist.

Counsel, W. McCauley, Jr., Haverstraw.

In conclusion, I am pleased to state that in the discharge of my duties I have been assisted by all the experts and chemists employed by you in this division, also those assigned to the division under Assistant Van Valkenburgh, in accomplishing what I have the honor to report.

Very respectfully yours.

F. D. TUTHILL.

WASHINGTONVILLE, *October* 1, 1890.

REPORT OF P. J. SUTLEY.

CASTILE, *October* 1, 1890.

HON. JOSIAH K. BROWN, *New York State Dairy Commissioner,*
Capitol, Albany, N. Y.:

DEAR SIR.— I most respectfully submit this, my report of the transactions of this division of the Dairy Department, comprising the counties of Cattaraugus, Genesee, Livingston, Monroe, Orleans and Wyoming, for the year ending September 30, 1890.

In my last report, I entered extensively into details respecting the system of our work and the number and condition of the factories in this division. We have adhered to that system, finding no cause for the change of methods which have shown so good results in the direction of purer food products. The number of cheese factories and creameries remain about the same, while the amount of milk shipped to the city will show an increase due to the demand created by driving impure and adulterated milk from the market. Our inspections have been made by the experts with regularity, and, while a number of samples have been taken and submitted to the lactometer and cream gauge tests, the milk has gauged higher on the average than heretofore, and there have been found fewer cases which have demanded prosecution.

I do not wish to be understood to claim that there are no impure food products in the market, nor that every offender of the law has been caught and punished; yet we feel confident that no greater results can be obtained than these we report with the same force and expense now allowed this division. At no time has there been greater demand for an increased force in this division than at present when the duties of the department have been increased by new legislation, entailing upon our staff increased duties.

MILK.

This department is one of great extent, both as regards the territory covered and the magnitude of the dairy interests.

The territory is dotted with small and large villages, and the large city of Rochester, with its numerous dealers, demands unremitting attention. Each county contains numerous cheese factories and creameries. Every foot of this ground should be traveled at least once a year, and many places should receive visits at short intervals, while others should have undivided attention. To perform the work even fairly the attachés of this department must be ever on the alert, and continuously traveling from place to place. The effect of the past enforcement of the law has been to discourage willful violations of the dairy laws. The law does not alone aim to catch rogues, but to encourage the improvement of the milk product by sensible and scientific treatment of dairy stock and the manufacture of dairy products. Most of the unscrupulous dealers have been deterred from adulterations of their milk through the fear of detection and severe punishment. But there is a large class of those who, through ignorance or penuriousness, give improper and unnourishing food to their cattle, or so house them that the nutriment of the food is neutralized by the unsanitary condition of the stable. A small share of the milk taken from such cattle has been found below the standard, which we believe to be entirely due to these conditions. It would therefore be necessary, even if adulteration after milking had ceased, to rigorously apply the tests to all milk, that the evils complained of may be abated.

There is a marked improvement in the quality of cattle owned by farmers. They have learned that poor cattle do not pay, as the output is small and inferior, and many cattle on the farms of this section are now of the best breeds, or good grades, and of high standard for dairy purposes.

The cattle barns receive greater attention than formerly, and almost as much pride is taken in their appointments as in the building of homes. Good ventilation and cleanliness is sought in planning these barns.

The question offered has for a long time received scientific consideration. The old-style farmer long adhered to the idea that all that was required was to cram the animal full of any coarse, lifeless husk, stalk or stubble, that was of use nowhere else. The farmer of to-day has learned better and feeds from the ensilage or hay-mow, when pasturage is no longer available.

The dairy department with its experts and literature has contributed not a little to these results. While its surveillance has checked the law-breaking, its encouragement of improved methods and better stock has supplied the other essential to pure and wholesome dairy products.

The many expressions of approval of those directly interested in these products is evidence of the worth of the department and the good results that come from its administration.

In connection with the report of the work in the city of Rochester, I wish to call attention to the facts appearing in our reports for 1888 and 1889.

In the former year the adulterations amounted to thirty per cent of the amount consumed. It was then determined by this department to stop the sales of impure milk and to leave no doubt in the minds of dealers that the law was not to become a dead letter but would be stringently enforced. As the outcome we, in 1889, brought prosecutions against about fifty persons who persisted in violating the law. The result is another evidence of not only the necessity of continued vigilance, but the persistent and rigorous enforcement of the law. Fewer cases than ever before have been found this year that required prosecuting, and the anxiety of peddlers to comply with the legal requirements of the law is shown in the fact that we have numerous samples brought to us by these people for inspection and analysis. As we noted in our report last year, the elimination of poor and adulterated milk from the market limits the supply of pure milk; creates new sources of supply and increases the demand, thus making the business more profitable and thereby resulting in a benefit to dairy farmers of incalculable value. As stated in that report, new sources of supply were created and a greater number of farmers have entered the business of producing and supplying milk until now milk is received from fully 100 miles from the city, where two years ago the furtherest point was only eighteen miles away.

The business of consigning milk is bound to increase under the results of the enforcement of this law, and if the farmer is wise he will retain so profitable a business by producing and shipping only pure milk. As in the case of the butter law in the enforcement of this law in the cities enlarges the market for the milk of the farmer. His milk will be taken by the city on account of the increased demand. The cheese factories will have to be supplied as usual, and thus the demand will require an increase in the number of milk-producing farmers, and stimulate competition and enhance the price of the best quality of milk.

It is the personal and pecuniary interest of every farmer that the dairy laws should be enforced, and that only the best quality of milk be marketed, and there is no conceivable reason why any farmer should adulterate his milk or produce that of a poor quality. Their persistence in doing so can only be construed as criminal action, and it is our intention to rigidly enforce the law against such, and use every honorable and legal means to secure the enforcement of the full penalties. The work in the cities has so improved the quality of the milk in sale as to warrant our giving increased attention to the work in the rural districts, and the milk producers and consignors in those districts may expect during the coming year more frequent visitations and inspections.

One obstacle to our success in securing evidence to convict a milk peddler is the claim that is often put forth when we take a sample from the wagons of unscrupulous milkmen, that it was taken out of a can of "skimmed milk." These men have the right to sell skimmed milk as such, but should be compelled by law to label their cans with the quality of the milk it contains either "pure" or "skimmed" milk. Then if a sample that is of low standard is taken from a "pure" milk can, the claim can not be made, as at present, that the sample was of skimmed milk, and that they were not, therefore, liable under the law. We are satisfied that these men sell such milk as pure milk, and thus impose upon their innocent patrons, and only make the *claim* to avoid prosecution — a claim that could not be set up were the cans labeled as suggested.

COMPLAINTS AND PROSECUTIONS.

On account of the increased duties devolving upon this department in the rural districts, the Dairy Commissioner divided this district on May 1, 1890, and set apart Monroe, Cayuga, Seneca and Wayne counties into a separate division with John H. Foley, Esq. as assistant commissioner, who undoubtedly will make a report to you for the time subsequent to that date. Herewith is the report of cases under my administration prior to that date.

THE PEOPLE *v.* CHAS. F. LAY.

Case sent to grand jury as per report of last year; indicted and admitted to bail; brought to trial in Court of Sessions before Judge Werner, May 19, 1890, and case dismissed by the court.

THE PEOPLE *v.* CHARLES LAY.

Case sent to grand jury as per report of last year; indicted by grand jury and case brought to trial in Court of Sessions before Judge Werner, May ninth. Found guilty by jury with recommendation to mercy. May fourteenth, sentence suspended by the court.

THE PEOPLE *v.* THOMAS H. EDDY.

On appeal at last report; heard before Court of Sessions, Judge Werner presiding. Conviction sustained and further appeal by defendant to Supreme Court now pending.

THE PEOPLE *v.* HENRY CAUDLE.

Sent to grand jury as per last report; indicted. Tried before Judge Warner in Court of Sessions, May 8, 1890. Convicted by a jury and fined twenty-five dollars.

THE PEOPLE *v.* THOS. M. JOSLIN.

Warrant issued March 10, 1890, on complaint for selling and offering for sale adulterated milk; arraigned March twelfth; adjourned to March nineteenth on motion of defendant. Tried before a jury, July nineteenth. Found guilty with a recommendation to mercy. Sentence suspended by the court.

THE PEOPLE *v.* JAMES J. THOMPSON.

Warrant issued March 10, 1890, on complaint for selling and offering for sale adulterated milk; arraigned March twelfth; adjourned on motion of defendant to March nineteenth; called March nineteenth, when on order of the county judge the case was sent to the grand jury; indicted June tenth, and case pending.

THE PEOPLE *v.* JEREMIAH RAGAN.

Warrant issued April 7, 1890, on complaint for selling and offering for sale adulterated milk; arraigned April ninth; arraigned April twenty-third; adjourned. Tried May thirteenth. Convicted and fined twenty-five dollars.

THE PEOPLE *v.* MARTIN REED.

Warrant issued May 5, 1890, on complaint for selling and offering for sale imitation butter; arraigned May sixth; adjourned to May thirteenth, when it was tried and decision reserved. On May nineteenth the court decided to discharge defendant, on the ground that the actual sale of the imitation butter was not proved, the judge giving the benefit of the doubt to the defendant, and held with the defendant that the information in the complaint specified section 7, chapter 183 of 1885, and that the defendant could not be found guilty under the subsequent amendments thereto.

THE PEOPLE *v.* MICHAEL DURICK.

Warrant issued on complaint, September 22, 1890, for delivering adulterated milk to cheese factory at Bennington, N. Y.; arraigned before Justice Clarence H. Bean, Attica, N. Y., September 24, 1890. Pleaded not guilty; bailed to September twenty-fifth, on which day he appeared, pleaded guilty, and fined twenty-five dollars.

THE PEOPLE *v.* JAMES GREEN.

Warrant issued on complaint, September 22, 1890, for delivering adulterated milk to cheese factory at Arcade, N. Y.; arraigned September 30, before Justice Clarence H. Bean, Attica, N. Y. Pleaded not guilty, and bailed; but later on the same day pleaded guilty, and was fined twenty-five dollars.

THE PEOPLE *v.* JAMES LYNCH.

Warrant issued on information, September 22, 1890, for delivering adulterated milk to a cheese factory at East Arcade, N. Y.; arraigned before Justice Clarence H. Bean, Attica, N. Y., September thirtieth. Pleaded not guilty.

The chemical analysis of this milk showed it to be below the standard required by law, it being deficient in cream, and became so through the willful act of someone. A large number of defendant's neighbors assured the prosecution of the high reputation of the defendant for honesty and integrity, and they asserted their belief that he had not intentionally violated the law. Not desiring to prosecute this man, where so reasonable a doubt of his guilt presented itself, we concluded to withdraw the prosecution.

THE PEOPLE *v.* JOHN DURICK.

Warrant issued on information September 22, 1890, for delivering adulterated milk to a cheese factory at Java Center, N. Y.; arraigned September twenty-fifth, and pleaded not guilty; case adjourned to November thirteenth, and again adjourned to January 8, 1891.

THE PEOPLE *v.* CARL CARLSON.

Warrant issued on complaint August 25, 1890, for delivering adulterated milk to a cheese factory at East Randolph, N. Y.; arraigned August twenty-seventh. Pleaded guilty, and fined twenty-five dollars.

THE PEOPLE *v.* CARL PULTZ.

Warrant issued on complaint in 1889, but defendant could not be found; a new warrant was issued August 25, 1890, the charge being delivering adulterated milk to a cheese factory at Otto, N. Y.; arraigned August twenty-seventh. Pleaded guilty, and fined forty dollars.

THE PEOPLE *v.* FRANK MERCHANT.

Warrant issued on August 25, 1890, for delivering adulterated milk at a cheese factory at Conewango; arraigned August twenty-seventh; adjourned to August twenty-ninth. Pleaded guilty, and was fined twenty-five dollars.

THE PEOPLE *v.* PATRICK DEVERAUX.

Warrant issued on complaint August 27, 1890, for delivering adulterated milk to a cheese factory at Ischua, N. Y.; arraigned August twenty-ninth. Pleaded guilty, and fined twenty-five dollars.

I again refer to the subject of trials before justices in the towns in the hope that some measures will be enacted that will protect the interests of the State.

It too often occurs that where we have the preponderance of evidence that a justice will discharge or a jury will acquit a defendant. These men will rarely ever convict their neighbors, and it is useless to swear out warrants. We have had instances where patrons of cheese factories have requested inspections of milk, but whose sympathies and encouragement appeared on the side of any violators who were brought to trial. There is encouragement to patrons in this wherever upon discovery a violator can be induced to pay a fine direct to the patrons; they then have no sympathy for the offender in fixing the amount of penalty. But, if the fine is not to come into their treasury, they seem to take no interest in having the violator of the law brought to justice. I have been much annoyed by these conditions on several trials during my incumbency of this office, and I have now determined upon resorting to a course that will do equal justice to the State and honest dairymen, securing a fair and impartial trial. In communities where the trials have been made a farce, by the partial judgment of justice or jury, I propose hereafter to proceed against the offender in a court of record, by a suit for a penalty. I believe that the results will have a salutary effect upon the classes complained of and bring them to a sense of duty to the State, equal to that which they seem to think is their obligation to their offending neighbor.

CHEESE.

The cheese product is larger in this division that any other in this State, and the visits of the expert cheesemakers have had beneficial results in improving the methods of manufacture and correcting deficiencies in the quality and flavor of the product. During July and August, 1890, I accompanied Mr. George A. Smith, expert cheesemaker, and expert Charles J. Morganstern also accompanied Mr. W. W. Hall, expert cheesemaker, on their respective visits to cheese factories in our division. We found that many matters of essential importance in the making of good cheese were ignored by some cheesemakers as immaterial, and that greater scientific knowledge of the properties of milk and its transformation into cheese was needed. It is my opinion that these instructions of the experts should be continued through the winter months, and be given to the farmer as well as the cheesemaker, when they have more leisure time in which to listen and digest the points and also plan for improvement of their methods for the coming dairy season. I would suggest a generous distribution among farmers and cheesemakers of the suggestions made on these visits by Messrs. Smith and Hall, and which have proven very valuable where they have been adopted by cheese manufacturers and the patrons of factories who supply the milk.

The output of the cheese factories in this division differs little from the amount heretofore detailed in my reports and to which I again refer you. The quality is improved, and no market has a better reputation for pure and well-made goods.

VINEGAR INSPECTION.

The vinegar law is only partially operative at present. The questionable economy of the State in its dealings with this department makes it impossible to extend its operations so as to reach the end ostensibly intended by the vinegar law to improve the vinegar product by preventing the manufacture and sale of vinegar below standard. The work required by the law is distinct and separate from that of dairy work, and our experts must also be trained for the work of vinegar inspection. We have none who can be spared from the work on hand in this extended district to be assigned solely to inspection of the vinegar product. However, whenever complaints are made or suspicion is aroused, we will endeavor to make inspections and bring to justice any offending parties. We have had conferences on the subject of this law and its enforcement with special vinegar experts A. S. Delano and H. Ruger, who have visited my division and made numerous inspections. I am satisfied that these gentlemen are doing all within their power to force compliance with the requirements of the law; but frequent inspections can not be made under the conditions in which the department finds itself, for the want of a sufficient appropriation to carry on efficiently and effectively the work outlined.

There are a number of cider vinegar factories in this district, all of which have been visited by the experts since the passage of the law, and in many places throughout the country there are cider mills operated almost altogether for converting the apples of farmers in the respective localities into cider. At present few of these local mills are in operation at all, and the regular factories are operated only on a small scale, on account of the almost entire failure of the apple crop. What will be the result of this almost complete stoppage of the manufacture of pure cider vinegar can only be conjectured. The demand for vinegar must be supplied. It is a necessity of life. If the demand can not be supplied with the pure article, what is to take its place? There can be but one answer: spurious vinegar will be substituted on the market. Is not the opportunity ripe for fraud and deception, and does it not demand that the department be fully equipped to cope with the conditions that confront it?

The vinegar law is a just and righteous one, benefiting the farmer and protecting the consumer, and should not be left inoperative by inadequate provision for its enforcement.

DISEASED CATTLE.

On January 9, 1890, this department discovered that a diseased cow owned by Michael Hannifan, and kept in a barn at Attica, N. Y., was being milked and the milk sold to families, and was in some cases being fed to infants. Samples of the milk were immediately taken and submitted to chemical analysis by Dr. F. P. Vandenbergh, our analytical chemist. The chemist reported that the milk contained almost no fat at all and showed unmistakable evidence of tuberculosis.

As the result of this examination, I invited Dr. Vandenbergh and Assistant Commissioner Drexelius, of Buffalo, to accompany me to Attica and investigate the case. In our presence Dr. Vandenburgh took another sample direct from the cow which verified his first analysis, and resulted in our determination that the milk product was dangerous to public health and that the animal must be removed.

Mr. Hannifan submitted to the demand, and on the next day the cow was killed, and we decided to take no further action in the matter.

This case is very similar to one which has since occurred in Buffalo. One Frank Schrettenbrenner kept a small dairy in a thickly settled portion of the city, and for a long time milked one cow which had bovine tuberculosis, the same as the Hennifan cow. She finally became so reduced in flesh and strength that she was unable to stand, and at milking time was lifted up and supported against the wall. She was in the most filthy and diseased condition, and yet the small amount of milk obtained was mixed with that of other cows and sold to families and children.

The process of lifting and supporting the cow at milking time attracted the attention of neighbors, and complaint was made to the Society for the Prevention of Cruelty to Animals.

The case aroused the most pronounced indignation of the press and the courts. Criminal action was begun in the police court, the grand jury found an indictment, and on October thirteenth last Judge Seaver of the court of sessions imposed a fine of $100. In commenting on the case at the time, Judge Seaver said:

"I have just been waiting for a case of this sort, where a man sells milk from a diseased cow to our children; but in this instance what could I do? The papers made a good deal of talk about the case at the time of indictment, but when the man appeared before me, here was a decrepit old man, 70 years old, with a petition signed by about 500 neighbors, and a doctor's certificate stating that imprisonment would kill him. What could I do more than fine him? for, to tell the truth, I don't believe the man can live, in or out of prison, more than a month or two."

It may be interesting to note here that Schrettenbrenner had been in the habit of drinking the milk of this cow, and at the advanced age of 70 years had general tuberculosis of pronounced kind, and there would seem to be a reasonable presumption that the disease had been communicated by the milk directly from the cow.

This department received information of the prevalence of hoof disease in cattle at Darien, N. Y., and immediately proceeded to investigate. We found that milk from the cows suffering from the disease was being shipped to Buffalo, but the shipments were forthwith stopped, and we, becoming satisfied that the consignors were innocent of the fact that such milk might be unhealthy and a source of disease, and they being willing to destroy all of the milk of these cows until the disease was cured, concluded not to take any further action. Our expert remained several days among the farmers of this section until fully satisfied that no more milk was being used from diseased cows, and these inspections were continued until the disease was fully eradicated.

BUTTER.

We found no imitation butter made or sold in this division, and if any is used it is shipped from out of the State to the user. We have received a number of complaints, but upon examination of the goods they proved to be only rancid butter, with the one exception, which is noted under the head of prosecutions.

The good work of the dairy department, which has through its experts so manifestly improved the cheese and butter made in factories and creameries, should be extended through pamphlets, lectures or other public gatherings in such a way as to reach the butter-makers of the farm-house.

My investigations upon finding rancid butter convinces me that the cause is from things to which most housewives attach little importance.

Much of this poor butter comes from ill-ventilated cellars, wherein vegetable matter has been allowed to decay during the season, and which are seldom if ever ventilated. The atmosphere of such cellars is very bad, and in addition to destroying the flavor of the butter, it must plant in the article disease-breeding germs.

We would suggest that the pamphlets issued by the department bearing on this subject be liberally distributed, so that they may be placed in the possession of every farmer.

Fines Imposed.

Henry Caudle	$25 00
Jeremiah Ragan	25 00
Michael Durick	25 00
Carl Carlson	25 00
Carl Pultz	40 00
Frank Merchant	25 00
Patrick Devereaux	25 00
James Green	25 00
Total	$215 00

In conclusion permit me to bear testimony to the faithful and intelligent discharge of their duties of the experts associated with me, and to the analytical chemists and attorneys whose ability and experience have greatly aided in advancing the interests of this department, and assisted in accomplishing the object for which it was established.

For the many courtesies extended by yourself please accept my grateful acknowledgment.

Most respectfully.

PATRICK J. SUTLEY,
Assistant State Dairy Commissioner.

REPORT OF PETER DREXELIUS.

BUFFALO, N. Y., *September* 30, 1890.

HON. JOSIAH K. BROWN, *New York State Dairy Commissioner:*

In conformity with my duty I hereby submit my report of the transactions of the dairy department in the division comprising the counties of Erie, Chautauqua and Niagara.

With each recurring year the varied interests which it is the province of this department to inspect increase in number, thus entailing on our working force increased duties, necessitating longer intervals between inspections, and thus giving enlarged opportunities for violations of the law. The effect of this law has been extremely beneficial, complaints have been comparatively fewer, and we know of no violators of the law who have not been prosecuted; yet it would be foolish to insist that there were no such violations or evasions. The province of this department is to detect such violations through vigilance. Our experts must be ever on the alert, and should visit, unannounced, different localities, inspecting the products of producers and dealers — the honest with the dishonest, the conscientious with the unscrupulous. Under existing conditions this is absolutely and physically impossible.

The milk used in the city of Buffalo alone comes over seven lines of railroad, and in addition milk is brought over numerous turnpikes that enter the city, aggregating 5,000,000 gallons a year, or about 625,000 cans.

There are in the city of Buffalo alone 382 stables in which are housed 2,464 cows — and 2,500 stores in which butter or milk, or both, are sold. To do the work thoroughly so as to make the imposition of impure products upon the public an impossibilty, if both the assistant commissioner and his four experts performed the work, each would be compelled daily to visit cow stables and inspect two cows; visit thirty-seven stores and examine the products offered for sale and test 400 cans of milk, visit and test the milk at one cheese factory besides attending to cases before the courts, the necessary office duties, and not considering the time consumed in traveling from place to place. The new vinegar law demands almost an equal amount of time and attention. It is thus evident that the force in this department is inadequate. This matter should receive the consideration of the Legislature. Our experts, more proficient from increased experience, have faithfully endeavored to prevent the reappearance of adulterated products. Daily rounds of visitation are made and samples of butter and milk taken and submitted to the usual tests. Imitation butter is neither made nor sold upon the market in this division. That it may be used by those who buy outside of the city in small amounts and use it for culinary purposes and occasionally in a cheap restaurant, is possible. But as there is no means of ascertaining when it arrives or to whom consigned, only, a daily visit to the kitchens of innumerable restaurants or boarding-houses would discover it. We have before suggested that if the United States internal revenue department could be induced to act in conjunction with this department we would be enabled to anticipate the arrival of spurious butter in this division, locate its use and bring the violators of the law to justice. Our inspections have found only genuine butter on sale in this division and the fact that, before the creation of this department, it was not only largely used but manufactured extensively, proves that the presence and the activity of the officers have crushed out the illegal manufacture, traffic and use of the spurious goods, and that continual vigilance will prevent its reappearance.

Inspections of milk are daily made, a large number of samples being secured, most of which is of standard quality. It is gratifying to note that the peddlers bearing the infliction of the law, if their milk should fall below the standard and its sale detected, bring samples to this office to be submitted to the test. This evidences a desire to be obedient to the dictates of the law and honesty of purpose to do justice to their customers and a determination to be free from imposition by unscrupulous consignors, or a desire to improve the standard and quality of their own stock where the product does not meet the standard test. It is thus that the department is not only efficient in keeping the market free from spurious or inferior products, but it protects the consumer, and impels a desire for a high-bred quality of cows and better feeding and housing of the same. Its value in this direction is beyond comparison with the pecuniary consideration of its cost to the people.

Much of the milk which has been condemned was not weak because of any adulteration, but because to a great extent the feed had principally been brewery and glucose refuse.

And even when the product appeared well by test it was positively injurious to health. This department was relieved of a large and exacting work in the city of Buffalo by the board of health of the city, which for sanitary reasons was obliged to investigate the feeding and housing of a large number of cows within the city limits. The results have been very gratifying, and the same objects as this department aims for have been obtained through those proceedings. Many barns were declared a nuisance and removed, others were reconstructed on better sanitary principles, while a number of owners have paid the penalty for their indifference to the health and comfort of the community.

Where such action was in contemplation this office deemed it wise to withhold its interference, and allowed the city officials to deal with the offenders, as the objects to be obtained were identical with those for which this office was created. It would have been as presumptuous as it would have been wasteful and cruel for us to have duplicated the prosecutions made by the city, but we held ourselves ready to assume the prosecutions had the city officials been derelect or failed in their efforts.

Pure and unadulterated milk is now being sold in this city almost without exception by the 600 milk peddlers and the nearly 2,500 storekeepers who sell milk.

The shipments of milk to the city by railroad are as follows:

GALLONS OF MILK RECEIVED.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	Grand total.
New York and West Shore railroad.........	6,170	8,528	21,600	20,242	19,873	19,411	20,205	21,736	22,381	26,200	28,401	30,600	....
Buffalo, Rochester and Pittsburg railroad	21,563	6,536	16,455	16,401	15,341	16,207	17,203	18,000	20,246	22,999	29,742	36,612	....
Delaware, Lackawanna and Western R. R.....	49,840	45,740	44,522	43,206	41,602	43,000	44,272	45,000	46,400	48,250	49,327	51,342	....
Western New York and Pennsylvania R. R ...	102,641	97,832	99,305	93,646	99,755	102,599	106,266	119,677	132,037	134,755	129,463	123,299	....
New York, Lake Erie and Western R. R.....	88,394	89,392	94,091	88,737	73,869	79,340	82,320	75,018	41,394	57,006	89,793	19,666	....
Buffalo and Southwestern railroad	89,052	9,352	7,884	6,232	4,548	608	956	1,260	5,028	4,910	4,666	4,152	....
New York Central and Hudson River R. R....	29,653	32,101	28,225	28,460	27,300	26,942	27,862	29,411	30,641	31,352	31,642	32,761	....
Total gallons........	307,333	289,483	312,082	296,924	282,288	288,107	299,084	310,102	298,127	325,472	263,034	298,462	3,570,498
Equal to cans													446,312

Visits to cheese factories have been as frequent as the limited number of our experts would allow. So anxious have the managers and patrons of cheese factories become to have only pure milk delivered that they have virtually become an adjunct to this department — promptly giving any information of the delivery of weak or impure milk and aiding in the conviction of the parties concerned. Self-interest demands that they take such a course. Impure milk lessens the amount of the cheese product and produces inferior quality.

As a class these persons are ardent supporters of the department, and are profuse in their compliments to the department for what it has accomplished.

The number of cheese factories in this division remains substantially as it was in last report, as follows:

Chautauqua factories	95
Erie factories	70
Niagara factories	4

COMPLAINTS AND PROSECUTIONS.

The case of W. A. Torge, pending at the time of my last report, was adjourned from time to time until November 12, 1889, when it was called. The defendant demanded a jury trial. While the sample upon which the prosecution was based was below the standard, the deficiency was so slight that our chemist advised abandoning the case, it being doubtful if a jury would convict. After consultation between W. F. Mackey, Esq., our counsel and the counsel of the defendant, I agreed to withdraw the complaint upon payment by the defendant of twenty-five dollars cost, which was paid and forwarded to the State Treasurer.

The result of the tests of milk delivered to the Dewey cheese factory at Dayton, N. Y., referred to in last report, was the issuing of warrants for William Knowlton, Fred. S. Johnson and Adelbert C. Wells, all of Dayton, from whose milk the condemned samples were taken. They all appeared in court November twenty-third with their attorneys and were discharged. The result was not justified by the facts, but it has been repeatedly proven almost impossible to convict before country justices.

October 15, 1889. Complaint was received that the patrons of the South Hill cheese factory at Colden, N. Y., were delivering adulterated milk to the factory. Experts Galligan and Coughlin visited the factory and took samples of milk as it was delivered, and all proved to be of standard quality.

October 10, 1889. Upon information, I directed Expert W. J. Corbett to issue a warrant for D. Frick, of Falconer, for delivering adulterated milk to a cheese factory. Upon investigation, Mr. Corbett found that the patrons brought a civil action against Mr. Frick and received a judgment for $125, and we concluded not to prosecute him.

November 14, 1889. The assistant commissioner and expert, John J. Coughlin, proceeded to Colden, N. Y., and upon information, had a warrant issued for Charles Frisch, of Colden, for delivering impure and adulterated milk to the South Hill cheese factory, operated by the Claire Bros. He was arraigned November sixteenth, pleaded guilty, and was fined twenty-five dollars.

November 16. Peter Bounhius, a grocer, of 822 Seneca street, Buffalo, notified this department that he had purchased a quantity of butter from a large commission firm in the city which he believed to be in part spurious butter or oleomargarine. Experts Galligan and Abrams inspected the goods, taking samples, which upon analysis by our chemist was found to be a very poor quality of butter but containing no animal or foreign fats and, therefore, not under the proscription of the law.

November 17. Upon information, a warrant was procured against James Mahar, of Clymer, N. Y., for delivering adulterated milk to the creamery of F. W. Edmunds, at Sherman, N.Y. Case called November twenty-first, the defendant appearing with counsel. A. C. Van Dusen, Esq., of Mayville, representing the department. After evidence decision was reserved and subsequently an order of acquittal was issued.

December 14. On information that Plimpton E. Jenks, a hotel keeper at Fredonia, N. Y., was serving oleomargarine on his table, the assistant commissioner and Expert Coughlin proceeded to the place, took dinner at the hotel, and brought with us a sample of the butter in use, which was submitted to the chemist and declared by him to be oleomargarine. Warrant issued March 4, 1890; arraigned March thirtieth; pleaded guilty; fined fifty dollars or ten days in jail. Failed to pay fine, and was incarcerated in the county jail for ten days.

December 10. On complaint of a Mr. Neuman, 124 College street, Buffalo, a milk peddler, we examined samples of milk consigned to him from Darien Center, N. Y., which on chemical analysis proved to be above the standard quality.

December 8. Received information that Mrs. Byrnes and Mrs. Parkhill, each keepers of boarding-houses in the city of Buffalo, were serving oleomargarine to their guests. Expert Abrams made an investigation at both houses, and upon being charged with violating the law, each acknowledged using the spurious butter in total ignorance of the law, and had given an order for more. On agreement to countermand the order given, and use no more, we concluded not to prosecute. A close watch and frequent inspection has failed to detect any further violation of the law.

December 20. On complaint of J. Neuman, milkman, of Buffalo, N. Y., a sample of milk consigned to him from Crittenden, N. Y., was made by experts Galligan and Coughlin at the place of shipment, which upon chemical analysis proved to be above the standard in quality.

January 24. Upon invitation of Assistant Dairy Commissioner P. J. Sutley, Dr. F. P. Vandenburgh, our chemist, and myself proceeded to Attica to assist in the investigation of the condition of the milk given by a cow, suffering with an ulcer on the back. A sample of the milk was taken for analysis, the chemist declared it bad and that it was dangerous to health and a cure was not likely to occur. Orders were given to have the animal killed which orders were carried out.

February 16. On information, a warrant was issued for Charles Brant, a grocer of the city of Buffalo, for selling and offering for sale adulterated milk. Arraigned February tenth before Justice King; adjourned to February eighteenth; found guilty and fined twenty-five dollars.

February 10. On information, a warrant was issued for Wendel Seiler, of Buffalo, for selling and offering for sale adulterated milk. Arraigned February twelfth; pleaded guilty and fined twenty-five dollars.

February 20. On information, a warrant was issued for Oscar Haertel, of Buffalo, N. Y., for selling and offering for sale adulterated milk. Arraigned February twenty-fourth; adjourned to February twenty-eighth, when he was fined twenty-five dollars.

February 20. On information, a warrant was issued for Jacob Koch, of Buffalo, N. Y., for selling and offering for sale adulterated milk. Arraigned February twenty-fourth; adjourned to February twenty-eighth; fined twenty-five dollars.

March 17. On information, a warrant was issued for Frank A. Shoemaker, of Buffalo, for selling and offering for sale adulterated milk. Arraigned March eighteenth; pleaded guilty; fined twenty-five dollars.

March 28. On complaint of E. P. Gorton, of Lockport, that an invoice of cheese received by him was of suspicious quality, the assistant commissioner and Expert Coughlin proceeded to Lockport, and found on inspection that the quality was not as poor as represented. A sample was obtained and submitted to chemical analysis and proved to be a good quality of cheese.

April 4. On complaint of Mrs. Dumphier that F. Gerter, milk peddler, was supplying adulterated milk, Experts Galligan and Coughlin took samples of milk sold by him and the same was submitted to chemical analysis and proved to be of exceedingly good quality. This woman had made numerous complaints to Captain Regan, of the Seventh Police precinct, regarding this milkman and the results proved the woman to be unreasonable, if not malicious, and the police department was relieved of further annoyance from this direction.

May 6. Upon information a warrant was issued for C. Bollard & Son, milk peddlers, for selling and offering for sale adulterated milk. Arraigned May seventh; adjourned to May ninth. Fined twenty-five dollars.

May 6. On information a warrant was issued for Frank Schrottenbrunner, a peddler who keeps cows housed in the heart of the city, for selling and offering for sale adulterated milk. Arraigned May ninth; adjourned to May twelfth; found guilty and fined twenty-five dollars. This case was then turned over to the Society for the Prevention of Cruelty to Animals, and he was again arraigned in court for selling milk from diseased cows. He waived examination and was held to the grand jury, indicted, tried at the Court of Sessions and fined $100.

May 7. On complaint of Mr. Roscoe Wait, of Boston, N. Y., that patrons were delivering adulterated milk to the Dye cheese factory, experts Galligan and Coughlin proceeded to the factory, took seven samples of milk as it reached the factory, and submitted the same for analysis, and all gauged at standard except one.

May 21. Upon complaint of Carey Lansdale, a milk peddler of Buffalo, that he was receiving adulterated milk from consignors at Akron, N. Y., experts Galligan and Coughlin visited the place of shipment, took samples and submitted them for chemical analysis, and they proved to be of good quality.

May 26. Upon information, a warrant was issued for Eldred Watts, of Cheektowaga, N. Y., for selling and offering for sale adulterated milk. Arraigned May twenty-ninth; adjourned to June seventh; waived an examination, and held for the grand jury. Indicted by the grand jury, and arraigned before the Court of Sessions, he pleaded not guilty; his case was put over to the next term of court.

May 27. Upon information of Market Clerk Benjamin Sabins, that butter had been sold to a Mrs. Fisher that was not above suspicion, Expert Galligan proceeded to the house of the lady and secured a sample which was submitted to chemical analysis, which proved to be a very poor quality of butter, but did not contain any animal or foreign fat.

June 4. On complaint of a Mr. Saxer, a milk peddler of Buffalo, that the milk consigned to him from Springville, N. Y., was of doubtful quality, the assistant commissioner and Expert Coughlin proceeded to that place and secured samples of the milk, which, on test by our chemist, proved to be good and above the standard.

June 9. This office received a complaint from H. M. Wright, agent for the Society for the Prevention of Cruelty to Animals, that Tobias Campion, of 273 Fulton street, Buffalo, was keeping his cows in an unhealthy condition. Expert Coughlin visited the stable and found that since the visit of Mr. Wright, Campion had put his cows out to pasture and cleansed and improved the stables; subsequent visits found no cause for complaint, as the cows were kept in a clean and healthy condition.

June 11. On information a warrant was issued for Jacob Neuman, a milk peddler of Buffalo, for selling and offering for sale adulterated milk. Arraigned June fourteenth. Pleaded guilty; fined twenty-five dollars.

June 11. On information a warrant was issued for Jacob Zirkelbach, for selling and offering for sale adulterated milk. Arraigned June sixteenth; adjourned to June nineteenth; again to June twenty-sixth. Convicted; fined twenty-five dollars.

June 27. On information a warrant was issued for Edward Schissler, a milk peddler of Buffalo, for selling and offering for sale adulterated milk. Arraigned June twentieth; adjourned to June twenty-fifth. Convicted; fined twenty-five dollars.

June 18. On information, a warrant was issued for Jacob Kramer for selling and offering for sale adulterated milk. Arraigned June twentieth; adjourned to June twenty-fifth. Convicted; fined twenty-five dollars.

June 23. On information, a warrant was issued for Herman Schissler, a milk peddler of Buffalo, for selling and offering for sale adulterated milk. Arraigned June twenty-fifth; adjourned to June twenty-seventh. Convicted; fined twenty-five dollars.

June 28. Upon complaint of M. F. Mersman, proprietor, that farmers were delivering milk to his cheese factory at Eden that was adulterated, experts Galligan and Abrams proceeded to that place, secured samples of milk, which were submitted to chemical analysis and found to be above the standard.

July 17. Complaint was made to us that C. W. Seaton, a huckster, was peddling poor and probably spurious butter, but of this we had not secured evidence to convict before he had been arrested by the city authorities for selling tainted food; he was convicted and sent to the penitentiary for thirty days for violating section 408, Penal Code.

July 29. On complaint of patrons of cheese factory at Hamburgh operated by Mr. Mersman, experts Galligan and Coughlin visited the factory, took five samples and submitted them to the chemist, who pronounced them of standard quality.

August 29. Received complaint from Richardson, Beebe & Co., that the patrons of their cheese factory at Holland, N. Y., were complaining that some patrons were delivering impure milk. Experts Galligan and Coughlin proceeded to Holland for investigation, took numerous samples and tested them, and brought four home and submitted them to the chemist for analysis, who pronounced them good with one exception, which we intend to prosecute.

September 3. A complaint was sent to us through Hon. Josiah K. Brown, State Dairy Commissioner, from John McAdam, of Forestville, N. Y., that patrons of the cheese factory were delivering impure milk. The investigation was placed in the hands of Expert W. J. Corbett, who reported to me that Mr. Morgan and himself made an inspection of said factory.

September 4. Upon request of Hon. Josiah K. Brown, State Dairy Commissioner, and under detailed instructions of Dr. R. D. Clark, State chemist, the assistant dairy commissioner and Dr. Vandenbergh, chemist, and experts Galligan and Coughlin, proceeded to East Aurora, N. Y., by rail and from thence to Porterville, N. Y., by wagon and visited the farms of A. H. Ball, F. W. Ball, L. C. Ells and Fred. Rupp. Samples of morning and night milk were taken and submitted to a chemical analysis.

I have the honor to submit the following report from Dr. F. P. Vandenbergh concerning these and other experiments made at the request of the commissioner:

BUFFALO, N. Y., *November* 6, 1890.

P. DREXELIUS, Esq., *Assistant Dairy Commissioner:*

DEAR SIR.— In accordance with your instructions I have visited a number of the dairies in this section for the purpose of obtaining samples of normal milk of known purity from herds of native cows of various ages, period of milking, varieties of food, etc., and determining the composition of such milk by the Adam's method as reported to the Society of Public Analysts and quoted in the last report of the New York State Dairy Commissioner, pages 379–380.

August 28. When I went with Expert John J. Coughlin, the first sample was taken from the dairy of J. Massert within the city limits of Buffalo.

Most of Mr. Massert's cows are of Jersey or other special breed and their product could not be regarded as normal milk, and so only one sample was taken and that from an average native cow, known as "Brindle."

This cow is 8 years old; native, seven months after calving; healthy and in good flesh; gives sixteen quarts per twenty-four hours; hygiene of stable the best; feed, ground corn and oats, brewers' grains, hay and fooder corn; exercise in yard every other night; Niagara water.

The analysis of this milk gave the following results:

Water	87.02
Solids	12.98
Fat	3.40
Solids not fat	9.58
Ash	0.704

The next samples were taken near Attica, Wyoming county, and Alexander, Genesee county, on August thirtieth and thirty-first, in company with C. J. Morgenstern. Samples were taken from the dairies of George B. Parish, Adelbert Fargo, William Rabb and Eugene Hart.

The Parish dairy consists of thirty-four cows, nearly all native, in good health and flesh, except two Durham, and one three-quarter Durham.

These cows are in low-land pasture, and most of the time have spring water, hay, and wheat screenings.

The cows calved in March or April last, and are from five to nine years of age; two samples were taken from this dairy, one from the cow thought to give the poorest milk of any, black native, five years, calved April, 1890. Analysis of this sample gave the following results:

Water	87.28
Solids	12.72
Fat	3.61
Solids not fat	9.11
Ash	0.700

The other sample taken at this dairy, was of the mixed milk of thirty-four cows, and yielded on analysis the following results:

Water	86.53
Solids	13.47
Fat	3.66
Solids not fat	9.81
Ash	0.684

The dairy of Adelbert Fargo consists of thirteen native cows, fed upon grass entirely, up-land and low-land pasture.

The cows are from five to seven years old, except one, which is twelve. All had calves during March or April last.

Analysis of the mixed milk of this dairy, showed the following results:

Water	86.38
Solids	13.62
Fat	3.47
Solids not fat	10.15

The dairies of William Rabb and Eugene Hart, are adjoining farms, have similar cows feeding upon the grass of bottom land only.

Mr. Hart has twelve cows, eleven native and one Holstein. The ages range between 4 and 10 years.— The yield from the twelve cows including one fine specimen of Holstein is 178 pounds at night, and 106 pounds in the morning. All had calves during March or April of this year.

Analysis of the mixed milk of the eleven native cows showed the following results:

Water	85.89
Solids	14.11
Fat	4.56
Solids not fat	9.95

The next series of samples were taken September fifth and sixth, by Assistant Commissioner Drexelius, Experts Coughlin and Galligan and myself, at several dairies in Erie county.

The dairies visited were those of F. W. Ball, Porterville; L. C. Ells, East Elma; A. H. Ball, Jameson's Road; and Fred. Rupp, East Aurora. F. W. Ball has fifteen cows, all native. Twelve cows are kept in thirteen acres of rolling-land pasture, day and night, also have fodder corn and about four quarts of starch meal at each feeding; have spring water and are salted daily. The average age is from 6 to 7 years. No fixed time of calving can be given for the herd as these dairies all ship milk to the city. The average yield of the fifteen cows is thirty-eight to forty gallons per day.

Analysis of the sample of night milk from this dairy showed the following results:

Water	87.14
Solids	12.86
Fat	3.52
Solids not fat	9.34
Cream	9.00

Mr. L. C. Ells has fifteen native cows from 2 to 7 years of age. They feed upon rolling-land pasture, sixteen acres, with spring water, and have a mixture of dry meal and bran besides pasture. Yield of herd, twenty-three to thirty-two gallons per day.

Analysis of the night's milk showed the following results:

Water	87.08
Solids	12.92
Fat	3.72
Solids, not fat	9.20
Cream	8.00

Morning's milk from the same herd yielded the following results:

Water	86.80
Solids	13.20
Fat	4.11
Solids not fat	9.09
Cream	10.00

The dairy of A. H. Ball contains twenty-three cows, mostly native, and of about the same average age, 5 years.

They have abundance of rolling pasture, spring water, meal and bran; hygiene of stable, the best.

The results of analysis of a sample of the mixed milk at evening are as follows:

Water	87.14
Solids	12.86
Fat	3.28
Solids not fat	9.58
Cream	7.00

The morning's milk of the same herd showed the following result:

Water	86.94
Solids	13.06
Fat	3.14
Solids not fat	9.92
Cream	8.00

The samples from the dairy of Fred. Rupp were slightly soured at the time of analysis, and the results are not sufficiently reliable to be inserted in this report.

After carefully considering all the important factors, such as breed, age, pasture, feed, etc., the results of these analyses confirm the conclusion of yourself and others based upon previous investigations, viz., that the present law of the State establishes a just and fair standard.

Very respectfully.

DR. F. P. VANDENBERGH,
Chemist.

September 8. Received complaints from patrons of Colden cheese factory that some patrons were delivering adulterated milk. Experts Galligan and Abrams proceeded to the place and took six samples from milk being delivered to the cheese factory of S. D. Vantz, at Glenwood, N. Y., and upon analysis all proved to be of standard quality.

The number of complaints and prosecutions were as follows:

Number of complaints	104
Number of complaints not justified	84
Number of warrants issued	20
Number of acquittals	4
Number indicted	1
Number of convictions	15
Number fined	14
Number imprisoned	1

Fines collected :

W. A. Torge	$25 00
Charles Frisch	25 00
Charles Brandt	25 00
Wendell Seiler	25 00
Oscar Heartel	25 00
Jacob Koch	25 00
Frank A. Schumaker	25 00
C. Bollard & Son	25 00
Frank Schrottenbrenner	25 00
J. Neuman	25 00

Jacob Zirkelback	$25 00
Edward Schissler	25 00
Jacob Kramer	25 00
Herman Schissler	25 00
Total	$350 00

Forwarded to State Treasurer	$187 50
Retained by court	162 50
Total	$350 00

VINEGAR INSPECTION.

Since the enactment of the vinegar law a thorough inspection of the factories, wholesale houses and retail stores, has been made by A. S. Delano, Esq., vinegar expert, with beneficial results, and I have aided him so far as the limited force in this office would permit. What has been done, in my opinion, is a good beginning, but to be of value to the consumer, an inspection should be commensurate with the importance of the work and the magnitude of the business. Buffalo manufactures more vinegar than any city outside of New York city; it is put in the market through numerous wholesale houses and dealt out to the consumer through 3,200 retail stores. The circular, and the inspection that followed, undoubtedly caused greater care to be exercised in the manufacture and sale of vinegar, but a relaxation of vigilance will encourage the return to the manufacture and sale of inferior vinegar and to a greater extent than ever this year, on account of the failure of the apple crop and consequent diminution of the supply of the basis of pure vinegar. (The demand must be supplied, and if not with pure goods then with adulterated substitute.) Their manufacture and sale can only be discovered by frequent inspection, made possible by an increased force in this department charged with that duty alone.

Last August the assistant commissioner accompanied Expert Delano on a tour of inspection through Erie and Chautauqua counties, visiting Dunkirk, Jamestown, Sherman, Ripley, Westfield and numerous smaller places. We found all of the vinegar on the market was above the standard test. On account of the scarcity of apples, however, farmers will manufacture but little vinegar this year. This will cause a scarcity this winter and next year, that will admit of the placing of adulterated vinegars upon the market, if the utmost vigilance is not exercised by this department.

In conclusion, I am gratified to be able to note in my report, the courtesies and assistance that have been rendered this department by Police Justice Thomas S. King; Counselor William F. Mackey; chemist Dr. F. D. Vandenbergh, and the experts of this division. The business of this division has progressed with expedition and the best results possible have been obtained. There have been no persecutions of any one, and all prosecutions have been pursued only when the violations have been willful, and the respect for the law and justice to the people demanded such prosecutions.

I have received many courtesies at your hands in the discharge of my duties for which permit me to here thank you.

Respectfully submitted.

PETER DREXELIUS,
Assistant Dairy Commissioner.

REPORT OF GEORGE A. SMITH.

[CHEESE INSTRUCTOR.]

HON. J. K. BROWN, *New York State Dairy Commissioner:*

SIR.— I most respectfully submit the following report of the work done by the cheese instructors during the year ended September 30, 1890.

After submitting our last annual report we continued factory work in the northern and western part of the State during the month of October. Messrs. Hall and Morgan in their individual reports give an account of the separate work performed by them. On October seventeenth, in company with Colonel F. D. Curtis, I went to Lisle, Broome county, and held dairy meetings. On the eighteenth we held a meeting at Whitney's point, on the nineteenth, at South Colesville. October twenty-third we held a meeting at Philadelphia, Jefferson county, going from there to Sherman, Chautauqua county, where we held a meeting on the twenty-fifth, another at Stockton on the twenty-sixth, and another at Jamestown on the twenty-eighth; from there we went to Allegany county where we held meetings at Belfast, Richburgh and Alfred Center. On November seventeenth we went to Albany county and held a meeting at Indian Fields; from there we went to Stamford, Delaware county, and held a meeting on the ninth; on the twelfth we held a meeting at Middleburgh, Schoharie county, and the thirteenth at New Berlin, Chenango county; on the fourteenth at Central Square, and on the fifteenth at Sandy Creek, Oswego county.

The last two meetings were joint conferences with the State Dairy Association. The object of these meetings was to instruct the farmer of the different sections of improved methods in feeding their cows and caring for their milk. They were well attended in nearly every instant, and were productive of good results as I was informed when in those localities during the past summer. November sixteenth, I went to Plattsburgh, Clinton county, to attend an institute of the State Agricultural Society which opened there on the eighteenth. I was engaged in this work with short intermissions until March twenty-eighth and twenty-ninth when the last institute was held at Gouverneur, St. Lawrence county. At the request of E. L. Bass, secretary of the Vermont State Dairy Association, and by your direction, I went to Rutland in company with W. W. Hall, and attended their annual meeting on the 15th and 16th of January, 1890. We made cheese in the hall where the meeting was held, as a practical illustration of our methods; I talked to those present on the care of cows and milk, endeavoring to set forth distinctly and clearly those principles and methods which, in our experience, we had found to produce the best results in the manufacture of cheese. Quite a part of the audience were much interested in the practical part of the work as they were thinking of making cheese the coming season, having been engaged in butter making. The price of butter had ruled so low the previous season that they believed they could better themselves by making full-cream cheese for the Boston market. Soon after the first of April I began work in the factories in Oneida and Herkimer counties. April seventeenth I went to Red Creek, Wayne county, where they were building a new factory and were anxious to have a dairy meeting and get instructions as to the latest and most approved methods for manufacturing full-cream cheese. This had been a butter section; I was met there by J. Gardinier, of Oswego, and F. A. Converse, of Jefferson county; we had an excellent meeting. They built their factory and had very good success during the first season.

Reports received from all parts of the State where we have held these meetings are to the effect that they want more of the same kind; that they obtained ideas in regard to feeding their stock and caring for their milk that they had never thought of before, and that it was a great help to them. At the request of the proprietor, I went to Avon, May first, to help his maker get started in the manufacture of full-cream cheese; he had never made any such. They had been making butter and skim cheese, the market for which was ruling so low that they could not pay the farmers enough for their milk so that they were satisfied to continue keeping cows; Mr. Wadsworth was trying to have his tenants continue keeping milk-producing cows; he requires the coarse fodder to be fed out on the farms; the business of feeding steers and young cattle, which they have followed in the Genesee valley for a great many years, is not profitable in competition with the western ranchmen. For that reason, he built this factory and equiped it in first-class shape, and is trying to make it pay the farmers enough for their milk, so that they will be satisfied to keep in the business. At the request of the secretary of the Cattaragus County Farmers' Club, I attended their monthly meeting at Hainesville, May sixth, and discussed the question of the care of milk by the farmer at home, in order to get the best results at the cheese factory.

The balance of the month I was kept busy attending the calls from Oneida, Madison and Oswego counties, with exception of two days, May twenty-seventh and twenty-eighth, that I spent at G. Merry's factory, Verona, with W. W. Hall and M. T. Morgan, making cheese and comparing notes, to see what improvement we could make in the plan of instruction. June third, in company with W. W. Hall, I went to Cuba, Allegany county, where on the succeeding day we attended the Allegany County Farmers' Club picnic, and talked on the improved method necessary for success in dairying. During the next two weeks I worked in factories in that section. I have received letters from some of the makers speaking very highly of the benefits they received at that time. On my return from there, I found a communication from J. Gardinier, asking me to come to Oswego county as soon as possible, as several of their factories were having considerable trouble with off-flavored and wet cheese. I spent the last half of June in that section; one factory that I visited was in bad shape, their cheese had a rank flavor, so much so that they could only sell them at a considerable reduction in price. Upon investigation I found that some of the farmers were feeding the refuse from the starch factory at Oswego. When it came hot weather they did not keep this feed sweet. The consequence was, the production of milk from which the maker could not get good-flavored cheese.

July first, I went to Lewis county at the request of a maker there who had trouble with his cheese. The first day I worked with him, and found the curds were tainted and gassy, and it was difficult to get them solid (there was not sufficient to the milk to develop a proper amount of acid). That evening, in company with the salesman, I took a team and drove around among the patrons to see how they were taking care of their night's milk, and found that in nearly every case where the night's milk was kept at home and brought in the morning, they had a long cooler pail which they filled with cold water and set in the cans of milk without dipping the milk. The result was that the odors and gases were all chilled in the milk, and produced just the trouble he was having. I had considerable difficulty in convincing some of the farmers that their milk would not sour if they did not cool it right down; but by promising to pay them for their milk if it did not keep, I persuaded them to follow my plan, which was to dip and air the milk until it was as near the temperature of the surrounding atmosphere as possible, and then leave it where there was a good, free circulation of pure air, keeping the water away from it. The result was that we had very much better milk the next day. The patrons, after trying this plan for a short time, were satisfied that it gave better results, and continued to care for their milk in that manner. The maker had no more trouble. The salesman informed me a short time since that their cheese had sold at the "top of the market" ever since. I worked in Lewis county during the first half of July, then, at the request of P. J. Sutley, assistant commissioner at Castile, Wyoming county, in company with W. W. Hall, I went there. We spent the balance of the month in that and Cattaraugus county, working in the factories.

Upon my return from the western part of the State, I received a call from a factory in the southern part of Oneida county; they were having trouble with their cheese; they had failed to get a dry curd; the consequence was the cheese lacked body and some of them showed considerable free moisture. I worked two days at this factory discovering and showing the maker where his trouble was; he went through the balance of the season in good shape. This trouble was quite prevalent through the month of August and a part of September. There appeared to be some condition in the feed or atmosphere that made it very difficult to make good, dry cheese. The same plan of handling the curd that had given good results in former years did not answer the purpose in a great many cases. We found that, if there was not considerable extra work done in "hand stirring" the curd after the whey was drawn, we would have so much moisture assimilated that the cheese would ripen too fast and would not hold their flavor. In some cases, we traced this trouble directly to the rennet extract they were using; it was either injured by keeping too long and at too high a degree of temperature or there was some defect in the manufacture, as we found by changing the extract that the difficulty was removed. We can not insist too strongly that the rennet extract that is put upon the market shall be pure. If there should be any acid used in the manufacture, to give additional strength, the result would be that, while it would thicken the milk, it would lack the peculiar principle which is the active agent in driving the moisture from the curd and in curing the cheese. It can, therefore, be readily seen, if anything is used in the manufacture that weakens that principle, that it could not help being an injury to the cheese, both in the flavor and in the keeping quality.

All the forepart of August I worked in the northern part of Oneida county; several factories in that section had trouble from tainted milk, which they were not able to handle so that the cheese would not show the taint.

In one of these factories the trouble was very pronounced; they had a considerable wild land; the dry, hot weather that came on about this time, following an excessively wet period, caused the pasture to dry up badly; the cows fed on the wild feed in the low places and in the woods; the result was a quality of milk from which it was impossible to produce a good-flavored cheese. I have received letters from several of these makers in which they say that the work I did in that section had been a great help to them. On August thirteenth I went to a factory in Madison county; the maker in this factory was producing a poor and pasty cheese; I spent two days with him; he wrote me afterward that he had no more trouble. On August nineteenth, at the earnest request of E. H. Brigham, I went to Ira, Cayuga county, where I met W. W. Hall; we held a conference, to which the makers and farmers of the surrounding country were invited; it was well attended, especially by the farmers and their wives, who came in the morning, bringing their provisions with them, spending the day watching our process and listening to the discussions. We tried to make plain to them the effect upon the milk of the different ways of handling it at the farm before taking it to the factory, both as to the amount of cheese that would be obtained from the milk and the better keeping quality of cheese made from well aerated milk. In the evening we held a meeting in the church, where J. Gardinier of Oswego, delivered an address upon the subject, "Is it profitable to keep cows in a grain-growing section?" W. W. Hall talked on the benefits of boards of trade in marketing cheese. I gave them a talk on the necessity of the farmer making a more careful study on the difference in the feeding value of the different cattle foods in order to get the best results in milk production.

The next day, at the owner's request, I visited a new factory which was started last spring; they got the patrons together and I gave them a talk on the proper way to care for their night's milk. They were chilling the milk instead of airing it; as a result the maker was having considerable trouble with rank flavor.

From there I went to Oswego county, at the request of a maker who was having trouble with soft-rind cheese, where I worked two days. September second, I went to Geneva to attend a dairy conference held at the State experimental farm, under the auspices of the dairy association. This meeting was well attended, and could not help but be a great benefit, as the whole subject of dairy farming, in all its different lines, was thoroughly discussed. During the balance of the month of September I was employed in answering calls from proprietors of factories in Herkimer, Oneida, Lewis and Oswego counties. In every factory which we have visited we have used every means in our power to impress on the minds of the milk producers the great necessity of a change in the plan of caring for the milk at the farm. We have given the subject of the aeration of milk a good deal of attention, and in cases where it has been given a fair test they can not be persuaded to go back to the old method of cooling without airing. We found that in many cases there had been no method, the milk being simply turned into the can at milking time, and left to care for itself, without regard to the weather. The sooner the milk producer disabuses his mind of the idea that anything having the appearance of milk is good enough to take to the factory, and uses the latest and best methods for producing good milk, the sooner will the complaints stop in regard to the quality of our cheese.

The attempt to make a good product out of poor material has never been, so far as I am aware of, very successful in any line of business, and it can not be in the manufacture of dairy products. Mr. H. E. Cook, of Lewis county, who has a large dairy of his own that he manages in connection with his cheese factory, tells me that he never went through a season with as little trouble as the one just past. There was not only an improvement in the flavor but also in the quality, it taking less milk to make a pound of cheese than formerly; this was brought about by the patrons of his factory agreeing at the annual meeting that they would furnish their cows with salt so that they could get it all times, and by the further fact that the patrons were using an aerator and using it intelligently, that is, where there was a good free circulation of pure air. There is one other subject to which I desire to call your attention, that is the condition of quite a large number of factories in use at the present time for the manufacture of cheese. These buildings were put up a good many years ago, and in many cases were poorly constructed. From long use, the floors have become rotten, whatever little drainage there ever was, if any, has become stopped up and the result is, no matter how well the farmer does his work, that when the milk is put in such a place, where the air is loaded with bacteria of putrefaction from the decaying floors and slops that are all about, it can not help but make a cheese that will decay soon after it is made. It would seem as though this should be remedied.

In conclusion let me say that, owing to the limited number that are engaged in this work, it has been impossible to give as much time, in some cases, as was necessary. We have, however, endeavored to cover the ground as nearly as possible. The letters we have received show to some extent the benefits of the work which has been done.

All of which is most respectfully submitted.

G. A. SMITH.

REPORT OF W. W. HALL.

[CHEESE INSTRUCTOR.]

Hon. J. K. BROWN, *New York State Dairy Commissioner:*

SIR.—I have the honor to submit the following as a report of the work performed by me as cheese instructor, during the year ended September 30, 1890.

During the first week of October, 1889, I worked in Allegany county illustrating our process of cheese-making, and a portion of the following week I did similar work in Steuben county. On October tenth, I attended a cheese conference in Cuba, Allegany county, in company with G. A. Smith and Colonel F. D. Curtis, on October eleventh, I made cheese with G. A. Smith at a factory in Castile, Wyoming county. The maker was desirous of becoming more familiar with the Cheddar system of cheese-making. The result of our day's labor pleased him, and he said he would report to us later as to the quality of our cheese. While in Castile, during the past season, we called on him and found that he had adopted our plan; the cheese on his tables were fine. I spent the next day in a factory at Bennington, Wyoming county, they had no curd mill and I only assisted the maker in the manipulation of the milk in the process of heating the curd in the morning. I next visited a factory in Arcade. This finished my work in the western part of the State for 1889.

At one factory in the western part of the State I found that they were having considerable trouble and sustained financial loss by receiving from one patron milk that was in such condition as to prevent the possibility of good cheese. The management of the factory seemed unable to remedy the difficulty. I took charge of the vat that contained the bad milk and found I had but twenty minutes to allow the moisture to pass out of the curd before a sharp acid developed, accompanied by a very disagreeable odor. I inquired of the maker as to the cause of the condition of this vat of milk, how long he had been annoyed with it, and who was bringing such milk to the factory; I did not arrive at the factory until the patrons had all gone home. He informed me that it was all caused by the milk delivered by one patron, who delivered a very large quantity; that he had sent a message to this man in regard to the condition of his milk and that the answer returned to him by the patron's employé was, "When you can not stand it any longer let me know." This discouraged the maker and he allowed the milk to pass into the vat each day, doing the best he could with it in that condition. I advised him to go to the farm of this patron, or to send some proper agent, to investigate for himself as to the cause of the condition of the milk and to talk to the proprietor concerning the matter, believing that if he did so that the cause would be discovered and the matter properly adjusted.

I met him a few days later and he stated to me that he had visited the farm, as I had suggested, and found that his message had never been delivered to the proprietor of the farm. The care of the milk was left entirely to employés, the proprietor being absent engaged in other business. The custom of these farm hands was to allow the milk to stand on the wagon in the barn without the slightest care or attention. The patron was pleased to have his attention called to the subject and he was perfectly willing to give his milk the proper care, which he afterwards did, thus obviating the difficulty at that factory.

I believe a full guarantee should be given by the maker to the patrons and that he should be held responsible for the quality of the cheese he produces, but he should have full control of the milk and the patrons should be willing to carry out his instructions in full as to the methods of caring for it. The maker should be informed upon the most improved methods of treating the milk at the farm and have the authority to compel the patrons to put such method in operation. In case, however, he is not allowed the authority, or that his instructions are not followed, he should be exonerated from responsibility for the quality or condition of the cheese. During the last days of October and the first of November, I was engaged in obtaining official figures from the books of the treasurers of the different cheese factories in Lewis county for the year 1888. December ninth and tenth I attended the annual convention of the State Dairymen's Association at Ithaca. From there I went to Penn Yan and Canandaigua and delivered an address at each of those institutes on the proper treatment of milk for the production of fine butter and cheese. Early in January, 1890, I attended the annual meeting of the Erie County Farmers' Institute, taking part in the discussions relative to dairy matters. This meeting was held at East Aurora. From there I went to Lowville, Lewis county, to attend a meeting of the Lewis County Cheese-makers' Association. We had a very large and profitable meeting, especially so to those interested in dairy matters. I find that the meetings held by us are better attended in places where there is a local organization, where the makers and patrons frequently discuss these important subjects. In such places we can accomplish more than where such organizations do not exist. During the months of February, March and April, I was engaged, a portion of the time, in dairy meetings held in the counties of St. Lawrence, Jefferson, Lewis and Oswego. There were meetings of cheese factory patrons held in towns where no institute had been held. We told the patrons, in these meetings, of the good results that could be obtained by the proper care of the milk at the farm and that thorough aeration, in our judgment, was the most important part in the process in caring for it. We urged them to look carefully to the care of the utensils coming in contact with the milk, and to the place where it was to be aired, emphasizing the fact that this place must be free from decomposed animal or vegetable matter and must be in every way a proper place for the work. On March fifteenth a meeting was held at my own factory in Gouverneur, the questions that were usually discussed at this annual meeting were passed by. The entire time was taken up in the discussion of the all-important question of the quality of the cheese and how it could be improved. I urged the importance of combining their efforts to secure a quality of milk that would enable me to make a cheese that would pass the critical inspection of the Montreal buyers and not take an excessive amount of milk for a pound of cheese. I had found by repeated experiments that I was compelled to give some vats of their milk such treatment to "kill the gas," and purify as far as possible the odor, that it was necessary to consume over twelve pounds of milk to make one pound of cheese; that not only fine cheese could be made, but the quantity could be increased by delivering to the factory a quality of milk that had been cared for at the farm with a view of making the finest possible kind of cheese.

I explained to them that milk was kept too sweet, as a rule, by the use of cold water or ice, and we were compelled to use a starter so as to get a dry firm curd. This, I said, was unnecessary if the milk was prepared for cheese-making, by the free use of pure air, and cold water kept away from it altogether. The result has been that I have used from twenty-five to fifty one-hundredths of one pound less milk for a pound of cheese in 1890 than in 1889. Besides this the quality has been improved so that special orders from Montreal have been sent each week for our cheese, and to-day I am getting an extreme price from a home-trade dealer in Cleveland, Ohio, yet there is room for further improvement. I advised the erection of sheds over milk cans, not only because of the injustice done those who keep their cans under cover, but because a better cheese can be made that is free from rain water. This meeting was one of great profit to me as well as to the patrons.

I began visiting factories and giving instructions about April eighth. My first work was in Oswego county; April twenty-fifth, I was called to a factory in Lewis county, where I gave instructions in the use of the lactometer, as well as in cheese-making. On May twentieth I went to Jefferson county and worked two full days, producing some fine curds. In the evening I talked to the patrons of the factory on the duty they owed to themselves, as well as to the proprietor and maker, in giving more attention to the very important part of cheese-making, namely, in preparing the milk for it. On May twenty-eighth I went to Cayuga county, and remained two days. During the first day I watched the maker to discover his mistake; the second day I made the cheese. He was trying to manufacture a cheese for home trade, but was not succeeding well. I assisted him afterward by writing to him, giving instructions and suggestions in that manner. I have a letter from him, a copy of which will be attached to this report.

On June third I went with G. A. Smith to Allegany county and attended a meeting of the Farmers' Club on the fourth. I talked to those present on the value of boards of trade, and how they operate in St. Lawrence county. After this I made cheese in different parts of the county. After returning from the western part of the State, I was called to a factory in Clinton county, near the Canada line. The maker was thoroughly discouraged, and was running curd into the creek. I closed the faucet to investigate the matter at least before allowing the curd to be all run off. I asked him what he was running it out for, and he said because it is sour and worthless. I informed him it was just the opposite of being sour, that it was the worst form of tainted curd, but that we could salt it and put it to press, as it had a value although it would not make a fine cheese. After we had finished the work at the factory that day, we procured a horse and drove to every farm, the milk from which was brought to the factory, and ascertained their method of caring for the milk. In every instance they kept the evening's mess in a shed or cellar, and at one farm they kept it under a manure shed. The manure was being hauled out during the time I was there. This was undoubtedly the cause of the milk being in the condition in which it arrived at the factory. Instead of being sour and thick, as the maker supposed, it was one of the worst kinds of taint; it was sweet and thick. I gave them all full instructions as to the proper methods to pursue and manner in which to keep their milk; in one case I remained at the farm and aired the milk with a dipper. On the following morning I was at the factory and received the milk as it was delivered and found it to be in good condition; I remained there during the day and made the cheese; they had no mill, so I made a stirred curd. The patrons here had heretofore patronized a butter factory, and were not educated in properly preparing milk for making cheese. The balance of June and the first half of July I spent in the counties of Clinton, St. Lawrence and Jefferson. On July fifteenth I went to Wyoming county, where I spent a week making cheese in different factories, going from there to Cattaraugus county. At one factory I spent a day with a young man who was not succeeding very well. The milk worked nicely the day I was there, and the curd had the appearance of producing a fine cheese. I endeavored to so arrange my time as to get back there and assist him one day more, but was unable to do so. He had a mill, but did not understand the Cheddar system. On the thirtieth I made cheese in a factory in Allegany county. The milk delivered here was bad; no maker could produce a fine textured and nutty-flavored cheese from such milk. During the first day here, I called in as many of the patrons as I could, and we talked concerning the care of milk at the farm. As the curd developed from one stage to another, I showed them how careless treatment would affect the product. The milk was tainted and had a stable smell also. The second day I was there, a decided improvement was manifest in the condition of the milk. The maker expressed himself favorably as to the result of the two days' work.

During August I was engaged in making cheese in St. Lawrence, Cayuga and Jefferson counties. I was engaged in giving instruction in making colored cheese a portion of the time in St. Lawrence county, the red spots having increased in the cheese in that county during the past season. This trouble is on the increase. I know of one factory where it has disappeared altogether, but in all other cases, of which I have cognizance, the difficulty seems to have come to stay; as yet I know of no injury resulting from eating these cheese, but they are very dirty looking, and our buyers deduct from one-half to one cent per pound from the best prices when purchasing it.

The all-important question for discussion in the cheese business, is, in my opinion, aeration of milk at the farm. I do not think it will prevent the red spots from appearing, or produce fancy cheese in the hands of an incompetent or indifferent maker; but I do think that if milk is thoroughly aired where it can not come in contact with foul odors, and the utensils are scrupulously clean, and everything is as it should be in and around the place where the milking is done, that the milk will then be in the best possible condition to be made into cheese. I have learned that milk must not be reduced below the temperature of the air any time of the year. It can be cared for in such a way that a starter will not be needed, which oftentimes makes lots of trouble for the manufacturer, who does not know just the degree of ripeness his milk possesses. A starter is a good thing, in many instances, but the maker must know his business, if he is going to use sour milk to start the development of acid. A good maker said to me that he thought I was making a mistake in not advising the use of sour milk in each and every vat. I find milk at different times in different conditions, some is ripe enough already, and sour milk would hasten the lactic acid to such an extent that the ordinary maker would produce a sour cheese. But with care in driving the cows, pure water for them to drink, a clean can to strain the milk in, a clean stable, and a strainer elevated so as to give the milk a thorough exposure to pure air, not only a fine cheese can be produced, but the quantity can be increased. Sometimes it is necessary to run the milk through the aerator twice, to remove the animal odors and cool it as much as possible without the use of water.

I have found in a number of cases during the past season that employés on the farm when in a hurry would not lift the pail up and turn the milk into the receiver, but would turn it into the can underneath the aerator. I can see no benefit that can be derived from such use of an aerator. I will quote from Ansel Watson, of Clinton, St. Lawrence county, who is a successful cheese-maker, relative to airing milk: "The aerator has saved me lots of trouble the past season. I have some patrons who do not use them, and I shall not receive their milk next season without airing. In any case where the milk is not in good condition after passing through the aerator, something is wrong in the surroundings and not in the device. Farmers must assist if they want us to make a cheese that will pass the critical inspection of the Montreal buyers, and thorough aeration is one of the most important parts of good care of milk."

The following is a copy of a letter from W. H. Lewis, of West Potsdam, N. Y., relative to aeration of milk:

West Potsdam, N. Y., *November* 22, 1890.

W. W. Hall:

Dear Sir.—The patronage for three years at the West Potsdam cheese factory has been about fifty each year. Season 1889 eighteen of Hodgkins' elevated aerators were used, and this season twelve more were purchased, making thirty used this season. Observations for the season of 1889 were limited, but favorable for the aeration of milk. After this season's observation the faith that was is made better, and I am pleased with the result, and believe it is the best known plan to care for milk to be used in the manufacture of cheese. Exposing the warm milk as soon as drawn from the cow to pure air removes gassy odors, oxidizes the milk, whereby its purification is more complete, and makes it less difficult to produce a fine flavored cheese. Aeration is the cheapest as well as the best way milk can be cared for, but the milk aerator will not do everything; skill, good judgment, cleanliness and care of cows are requisite, and all must be had to produce a good article of cheese.

Respectfully yours.
W. H. LEWIS.

The following is a copy of a letter received from J. C. Birge, Heuvelton, St. Lawrence county, N. Y. Mr. B. is one of our successful makers:

W. W. Hall:

Dear Sir.— I have had two seasons' experience with aerating milk, and I am free to say that it is the only proper manner in which milk can be successfully prepared for cheese-making. I urged my patrons to adopt a system and most of them did with good results. If I were to operate my factory another season myself, I should refuse to accept milk that had not been thoroughly aired. Its value to milk can not be estimated if it is properly done.

Yours truly.

J. C. BIRGE.

Quite a number of makers from Canada have been employed by our factorymen during the past season; in nearly every case they have been recommended by some Canadian buyer as being successful there. But so far as I have observed they all fail on this side. They made from a rule laid down by Mr. McPherson or Professor Robertson, and in nearly every case where I have been called to assist one of them the trouble has been more with them than with poor milk. Our milk does not work the same as in Canada, and the same treatment that produces good results there will not necessarily do so here. It is easier to make a dry curd in Canada than in St. Lawrence county, and we have the same advantage over the central and western parts of our State. Our best cheese in New York State are finer than the finest in Canada, and are of a better quality than any of our makers can produce there, because we have better milk to make it from. The systematic way of doing their work, if applied here in New York State, would produce a very fancy cheese.

W. W. HALL.

REPORT OF M. T. MORGAN.

[CHEESE INSTRUCTOR.]

HON. J. K. BROWN, *New York State Dairy Commissioner:*

SIR.— I respectfully submit the following as a report of the work performed by me for the year ended September 30, 1890.

My first work was in October, 1889, in Chautauqua, in company with W. J. Corbett, visiting factories and working in some where we found the makers anxious to learn our modified Cheddar process. The season for cheese-making was nearly closed, the weather was cool and there was a shortage in the milk so that the conditions were not favorable to a fair demonstration of our method. Where I made cheese, however, the method was liked, and all wished that I had come earlier in the season, when the milk was more plenty and the weather warmer.

About the fifteenth of October, I was called to Clinton county by Mr. A. D. Boomhower to assist at one of his factories in which they had given up making butter and were then making cheese. The result of my work there seemed quite satisfactory to the maker. In November and December, I was in Herkimer county gathering factory reports, and working in full-cream factories assisting these needing or desiring aid. During the months of January, February and March, my time was occupied mostly at meetings at factories with W. W. Hall, in the counties of Jefferson, Lewis and St. Lawrence. These meetings were well attended and were, I think, of great value to the farmer. The subject of aeration and the manner of caring for milk was thoroughly discussed, as was also the Cheddar method of manufacturing cheese. Upon my return to many of these factories, where they had employed the method of aeration. I invariably found but little tainted milk, and as a rule no floating curds. I believe the farmers can not do as little labor that will pay them as well in cash as it will to aerate the milk when first drawn from the cow;

the product will be greater and the quality better. During the month of April, I worked in Herkimer and Otsego counties. The milk delivered at the factories which I visited in these counties, was free from taints; the fault there was that it took more milk for a pound of cheese than it did during the previous year, this was due to feeding more hay and less grain than in the spring of 1889. During the months of May and June I received applications from many makers in the central part of the State for assistance. Their trouble was too much moisture; when the cheese arrived in New York and other markets the surface would be wet and the cheese pasty. The main reason for this was that the milk was not properly aerated, thus the animal odor was left in the milk which prevented the rennet from driving out a sufficient amount of moisture before the acid appeared so that assimilation was not complete, and after the cheese commenced to cure a surplus moisture separated from the curd and caused a wet and mushy cheese. I found that by cutting the curd, when quite soft, and hand stirring, when the whey was being drawn, assisted the rennet in its work of driving out the moisture and the trouble was obviated. In a few instances, trifling defects on the part of the maker caused a little of the trouble. During the month of July, I again visited Chautauqua county where the milk delivered at the factories, which I visited, had less taint than any I had found for weeks before. A large number of these factories were working by the stirred curd plan; their cheese were open and porous in many instances, the flavor of these cheese was better than I expected. Those factories which were using curd mills seemed to get a more solid textured and more meaty cheese. My work in this county was satisfactory to myself, and the makers expressed themselves as very much pleased. During the month of August I was in Otsego county a considerable of the time working among the home-trade factories there; their trouble, to a great extent, was caused by the farmers cooling their milk with water and ice, this chilled the milk so that the animal odor was held in the milk and did not develop until the milk was heated in the process of manufacturing into cheese, then it caused trouble. I instructed them as to aerating their milk, thus ridding it of its odors immediately after milking; they tried it and had better results. It required two visits at a number of these factories, before they were convinced that the aeration was of value. One maker was convinced that it should be done, but could not succeed in getting his patrons to adopt that method of caring for their milk. He therefore asked them to bring their milk twice a day, and as soon as they could after milking. They complied with this request. The maker fixed an aerator of his own in the make-room and aerated each mess of milk as it was delivered at the factory. He says that it was of great advantage to him, as a maker, and of material advantage to the patrons, that this material advantage, however, would have been greater had the milk been aerated at the farms as soon as drawn from the cows.

During the month of September, I worked in the counties of Oneida, Lewis and Clinton, most of the work being done at factories where the cheese retained too much moisture. I think that the care of milk, to be delivered at a cheese factory in the best condition for the manufacture of cheese, is not as well understood by farmers generally, as it should be. Cheese-makers should instruct their patrons in this matter, being careful to emphasize the fact that without aeration bad results will follow, as a rule. If the milk dealers at the stations on the lines of the railroads supplying the city markets would insist upon a thorough aeration of the milk before the cans are covered at the farm, they would have a better flavored and better keeping milk. It is but fair to assume that if milk of this kind was placed upon the market the consumption would be greatly increased.

M. T. MORGAN.

REPORT OF W. G. SPENCE.

HON. JOSIAH K. BROWN, *New York State Dairy Commissioner:*

SIR.—I herewith submit the report of the work performed by me as an agent of the department, during the year ended September 30, 1890.

During the present milk season, I have made 2,031 inspections of milk in the counties of Oneida, Herkimer, Madison, Lewis, Otsego, Chenango, Oswego and Montgomery. My time has been mostly occupied answering calls made, because of suspected adulterations. I have made sixty-eight regular factory inspections, and in each case every sample delivered at the factory was subjected to such tests as have been found to give, approximately, the percentage of solids in the milk. The skill necessary to accomplish this can only be acquired by practice, and a close study of the work, and learning and comparing the determinations by actual analyses of all samples delivered to the chemists. When on my way to and from factories, and time would permit, I called and gave such instructions in relation to the care of milk, detecting adulteration, etc., as were desired by the factories which I might pass. I have also inspected the milk supplied to the inhabitants of five incorporated villages by peddlers. In accordance with directions, I also inspected ten herds of cattle, aggregating 326 native cows of varying ages and conditions as to feed and care. These dairies were located in different sections of Oneida and Herkimer counties. A sample of the average milk was obtained from each herd and delivered to Dr. Deecke for analysis. During the season, I delivered to Dr. Deecke at Utica, for analysis, twenty-six samples believed to be adulterated. When delivering one of the samples, the bottle containing it was accidentally broken, the owner, however, settled with the factory by paying the damages, another sample was found to contain one-tenth of one per cent of milk solids more than the statute required. The average per centum of milk solids in the twenty-four adulterated samples was ten and seventy-ninehundredths; the average per centum of fat was two and ninety-seven-hundredths. Nearly all the people from whose milk these doubtful samples were taken have settled with their respective factory satisfactorily. The range in quality of these samples as determined by analysis was from nine to eleven and eighty-eight-hundred per centum total solids and from one and twenty-eight-hundredths to three and fifty-eight-hundredths per centum of fat. Several other cases of slight adulteration were detected. At one of the Otsego county factories the owner and two of the patrons were detected and admitted that they were skimming their night's milk a little notwithstanding that the factory was using the State brand as a guarantee that the cheese were full-cream. Of the 2,031 samples of milk inspected, 1,900 were either samples of known purity or regarded as above suspicion of adulteration. Two thousand four hundred and eighty-six samples of milk were examined, including milk on trains in transit from New York. The whole number of factories visited, including milk stations, was eighty-six. Several applications for inspections at factories and milk stations could not be complied with, owing to the pressure of work already in hand. For further and more detailed information as to the work performed by me, please see my weekly reports on file in your office.

W. G. SPENCE,
Expert.

REPORT OF R. D. CLARK, M. D.

Hon. J. K. Brown, *New York State Dairy Commissioner:*

I have the honor to present the following report:

The following 140 analyses of milk were of samples of known purity; that is, samples which were drawn from the cow in the presence of one or more of the agents of this department. They have nearly all been analyzed by the two methods known as the old, or Wanklyn-Waller method, and the new, or Adams method. All were analyzed by the latter.

We would like to state, at the outset, that procuring samples of pure milk from herds is attended with more difficulty than would be supposed. The milking is frequently done, especially where a number of men are employed in large dairies which are kept for the purpose of producing milk to peddle out in cities, by men whom it is difficult to make understand or appreciate the necessity of conducting the entire process with the utmost care, and to milk the animals clean. In the second place, there are usually no facilities present for thoroughly mixing large quantities of milk; hence we have been obliged to take the mixed milk of but few of a herd, and, when we have taken the samples ourselves, we have asked the dairyman to pick out the cows he considered the poorest of the herd.

We are happy to state that we were uniformly treated with the utmost courtesy by the proprietors of the dairies we visited, and they did everything in their power to aid us in obtaining samples, fully realizing that a just standard must be based upon facts.

Owing to the fact that more fat is extracted from a sample of milk by the Adams' method than by the old method, the standard set by the Legislature has been practically lowered. The difference in the amount of fat obtained by the two methods has been found to vary considerably when the methods were worked by different chemists. The real difference and, also, the amount of fat ordinary pure milk will give by the new process, will be seen by a perusal of the following table.

It will be observed that the samples of milk have been taken from nearly every county in the State, and, with a few exceptions, from common native cows, and under the most varied conditions of feed, surroundings, climate, water, care, use to which the milk is put, etc., that exist in our State. The majority of the samples, however, were taken from cows which were kept upon feed and under conditions calculated to produce quantity regardless of quality. Also, the analyses were made by different chemists throughout the State, and, except where otherwise mentioned, by uniformity in the processes employed.

RESULTS OF ANALYSES OF SAMPLES OF PURE MILK.

NUMBER.	Water.	Solids.	Fat by W. W. method.	Fat by Adams' method.	Dif	Ash.	Chemist.	By whom taken.	Date.	Time of milking.
1	86.42	13.58	4.58	4.88	.30	.70	R. D. Clark and E. J. Wheeler.	J. E. R.	June 30	....
2	86.78	13.22	4.04	4.33	.29	.63	R. D. Clark and E. J. Wheeler.	J. E. R.	June 30	....
3	88 01	11.99	3.43	3.56	.13	.65	R. D. Clark and E. J. Wheeler.	W. G. S.	July 8	....
4	87.26	12.74	3.69	3.79	.10	.70	R. D. Clark and E. J. Wheeler.	W. G. S.	July 8	....
5	87.53	12.47	3.23	3.42	.19	.67	R. D. Clark and E. J. Wheeler	J. H. B.	July 8	....
6	87.31	12.69	3.56	3.67	.11	.61	R. D. Clark and E. J. Wheeler.	J. H. B.	July 8	....
7	87.30	12.70	3.62	4.07	.45	.62	R. D. Clark and E. J. Wheeler.	J. E. R.	July 11	....
8	87.70	12.30	3.26	Lost.	......	.68	R. D. Clark and E. J. Wheeler.	J. E. R.	July 15	....
9	86.99	13.01	3.92	4.04	.12	.60	R. D. Clark and E. J. Wheeler.	J. E. R.	July 16	....
10	86.38	13.62	4.21	4.67	.46	.60	R. D. Clark and E. J. Wheeler.	J. E. R.	July 16	....
11	87.46	12.54	3.33	3.60	.27	.61	R. D. Clark and E. J. Wheeler.	J. E. R.	July 16	....
12	87.18	12.82	4.18	4.07	—.11	.61	R. D. Clark and E. J. Wheeler.	R. D. C.	July 17	4.30 P. M.
13	85.95	14.05	4.73	4.92	.19	.65	R. D. Clark and E. J. Wheeler.	R. D. C.	July 17	2 P. M.
14	86.79	13.21	4.19	4.44	.25	......	R. D. Clark and E. J. Wheeler.	J. E. R.	July 17	....
15	87.94	12.06	3.28	3.36	.08	.63	R. D. Clark and E. J. Wheeler.	J. E. R.	July 17	....
16	87.45	12.55	3.76	3.81	.05	.68	R. D. Clark and E. J. Wheeler.	J. E. R.	July 18	....
17	86.08	13.92	4.03	5.48	.45	.63	R. D. Clark and E. J. Wheeler.	J. E. R.	July 22	....
18	87.96	12.04	3.08	3.45	.37	.64	R. D. Clark and E. J. Wheeler.	J. E. R.	July 22	....
19	87.56	12.44	3.51	4.01	.50	.66	R. D. Clark and E. J. Wheeler.	J. E. R.	July 25	....
20	86.23	13.77	5.02	5.44	.42	.66	R. D. Clark and E. J. Wheeler.	J. E. R.	July 25	....
21	87.88	12.12	3.31	3.79	.48	.63	R. D. Clark and E. J. Wheeler.	J. E. R.	July 25	....
22	87.53	12.47	3.51	3.97	.56	.59	R. D. Clark and E. J. Wheeler.	R. D. C.	July 29	1.30 P. M.
23	88.04	11.96	3.39	3.60	.21	.62	R. D. Clark and E. J. Wheeler.	R. D. C.	July 30	8 P. M.
24	86.74	13.26	4.54	5.01	.47	.67	R. D. Clark and E. J. Wheeler.	R. D. C.	August 1	2.45 P. M.
25	87.27	12.73	3.69	3.90	.21	.63	R. D. Clark and E. J. Wheeler.	R. D. C.	August 4	1 P. M.
26	86.35	13.65	4.70	5.05	.35	......	R. D. Clark and E. J. Wheeler.	R. D. C.	August 5	2 P. M.
27	85.78	14.22	3.29	4.15	.86	.79	R. D. Clark and E. J. Wheeler.	R. and N.	October 22	A. M.
28	85.70	14.30	4.40	5.00	.60	.72	R. D. Clark and E. J. Wheeler.	R. and N.	October 22	A. M.
29	86.85	13.15	3.67	4.25	.58	.71	R. D. Clark and E. J. Wheeler.	R. and N.	October 23	A. M.
30	87.06	12.94	3.03	3 63	.60	.72	R. D. Clark and E. J. Wheeler	R. and N.	October 27	A. M.
31	86.71	13.29	3.10	3.86	.76	.72	R. D. Clark and E. J. Wheeler.	R. and N.	October 28	A. M.
32	86.58	13.42	3.99	4.42	.43	.73	R. D. Clark and E. J. Wheeler.	R. and N.	October 28	A. M.
33	87.37	12 63	3.20	3 75	.55	.72	R. D. Clark and E. J. Wheeler.	R. and N.	October 29	A. M.
34	86.85	13.15	3 38	3.87	.49	.75	R. D. Clark and E. J. Wheeler.	R. and N.	October 29	A. M.
35	85.81	14.19	4.05	4.65	.60	.71	R. D. Clark and E. J. Wheeler.	R. and N.	October 29	A. M.
36	86.72	13.28	3.63	4.13	.50	.60	R. D. Clark and E. J. Wheeler.	J. E. R.	November 11	4.20 A. M.
37	86.36	13.64	3.83	4.25	.42	.60	R. D. Clark and E. J. Wheeler.	J. E. R.	November 11	4.20 A. M.
38	85.63	14.37	4.15	4.68	.53	.73	R. D. Clark and E. J. Wheeler.	J. E. R.	November 12	4.35 A. M.
39	86.99	13.01	3.24	3.76	.52	.67	R. D. Clark and E. J. Wheeler.	J. E. R.	November 13	4.20 A. M.
40	87.36	12.64	2.83	3.47	.64	.69	R. D. Clark and E. J. Wheeler.	J. E. R.	November 13	4.50 A. M.
41	87.26	12.74	3.59	3.96	.37	.66	R. D. Clark and E. J. Wheeler.	F. DeL.	November 2	P. M.

42	86.40	13.60	4.14	4.61	.47	.66	R. D. Clark and E. J. Wheeler.	R. D. C.	August	11	P. M.
43	86.00	14.00	4.42	5.03	.61	.68	R. D. Clark and E. J. Wheeler.	J. E. R.	August	14	P. M.
44	86.35	13.65	4.36	4.97	.61	.60	R. D. Clark and E. J. Wheeler.	J. E. R.	August	14	P. M.
45	87.14	12.86	3.93	4.52	.59	.66	R. D. Clark and E. J. Wheeler.	J. E. R.	August	14	P. M.
46	86.61	13.39	3.80	4.25	.45	.70	R. D. Clark and E. J. Wheeler.	J. E. R.	August	15	P. M.
47	85.99	14.01	4.64	5.30	.66	.66	R. D. Clark and E. J. Wheeler.	R. D. C.	August	19	3 P. M.
48	87.80	12.20	3.37	3.88	.51	.68	R. D. Clark and E. J. Wheeler.	R. D. C.	August	20	3 P. M.
49	87.02	12.98	4.21	4.51	.30	.64	R. D. Clark and E. J. Wheeler.	R. D. C.	August	22	3 P. M.
50	87.24	12.76	3.86	4.16	.30	.70	R. D. Clark and E. J. Wheeler.	R. D. C.	August	22	3 P. M.
51	87.30	12.70	3.62	4.12	.50	.63	R. D. Clark and E. J. Wheeler.	R. D. C.	August	25	3 P. M.
52	87.37	12.63	3.33	3.74	.41	.70	R. D. Clark and E. J. Wheeler.	C. V. L.	August	27	3 P. M.
53	86.17	13.83	4.45	4.84	.39	.70	R. D. Clark and E. J. Wheeler.	C. V. L.	September	2	3 P. M.
54	86.54	13.46	4.33	4.67	.34	.71	R. D. Clark and E. J. Wheeler.	C. V. L.	September	4	4 P. M.
55	87.45	12.55	3.58	3.89	.31	.67	R. D. Clark and E. J. Wheeler.	R. D. C.	September	18	3 P. M.
56	86.25	13.75	4.42	4.81	.39	.66	R. D. Clark and E. J. Wheeler.	R. D. C.	September	20	5.20 P. M.
57	86.68	13.32	3.98	4.34	.36	.66	R. D. Clark and E. J. Wheeler.	R. D. C.	September	20	5.20 P. M.
58	84.94	15.06	4.65	5.20	......	.74	R. D. Clark and E. J. Wheeler*				
59	85.59	14.41	4.13	4.82	.69	.67	R. D. Clark and E. J. Wheeler	R. D. C.	September	24	3 P. M.
60	85.56	14.44	4.14	4.82	......	.72	R. D. Clark and E. J. Wheeler	R. D. C.	September	24	3 P. M.
61	85.23	14.77	5.17	5.46	.29	.71	R. D. Clark and E. J. Wheeler.	R. D. C.	September	26	5.20 P. M.
62	86.77	13.23	3.62	4.05	.43	.69	R. D. Clark and E. J. Wheeler.	R. D. C.	September	26	6 P. M.
63	87.60	12.40	3.26	3.71	.45	.64	R. D. Clark and E. J. Wheeler.	R. D. C.	October	2	....
64	86.40	13.60	3.85	4.45	.60	.66	R. D. Clark and E. J. Wheeler.	R. D. C.	October	2	....
65	86.69	13.31	3.61	3.39	.78	.67	R. D. Clark and E. J. Wheeler.	R. D. C.	October	2	6 P. M.
66	87.17	12.83	3.30	3.76	.46	.70	R. D. Clark and E. J. Wheeler.	N. and R.	October	16	6 A. M.
67	86.53	13.47	3.87	4.22	.35	.67	R. D. Clark and E. J. Wheeler	N. and R.	October	21	A. M.
68	87.06	12.94	3.17	3.86	.69	.68	R. D. Clark and E. J. Wheeler	N. and R.	October	21	A. M.
69	87.07	12.93	3.27	3.94	.67	.64	R. D. Clark and E. J. Wheeler	N. and R.	October	21	....
70	86.93	13.07	3.42	4.08	.65	.68	R. D. Clark and E. J. Wheeler.	J. E. R.	November	28	....
71	86.63	13.37	4.34	4.58	.24	.76	Stillwell & Gladding	C. H. T.	August	10	....
72	87.97	12.03	3.05	3.52	.47	.94	Stillwell & Gladding	F. D. T.	August	7	....
73	87.55	12.45	3.67	3.95	.28	.70	Stillwell & Gladding	P. and P.	September	8	....
74	87.18	12.82	3.60	3.92	.32	.70	Stillwell & Gladding	P. and P.	September	8	....
75	86.76	13.24	4.15	4.62	.47	.77	E. G. Love	G. W. P.	September	23	....
76	86.58	13.42	3.77	4.33	.56	.92	E. G. Love	G. W. P.	September	24	....
77	88.22	11.78	3.03	3.60	.57	.73	Geisler	G. W. P.	September	8	....
78	87.10	12.90	4.12	4.70	.58	.73	Geisler	R. H. P.	September	12	....
79	87.55	12.45	3.39	3.80	.41	.75	Geisler	R. H. P.	September	12	....
80	87.42	12.58	3.35	3.81	.46	.75	Geisler	R. H. P.	September	12	....
81	87.90	12.10	2.90	3.62	.72	.76	Geisler	C. and P.	September	4	Evening.
82	87.89	12.11	3.48	3.64	.16	......	William Manlius Smith	P. H. P.	August	4	5 A. M.
83	87.69	12.31	3.64	3.73	.09	......	William Manlius Smith	P. H. P.	August	4	4.50 A. M.
84	87.88	12.12	3.56	3.81	.25	......	William Manlius Smith	P. H. P.	August	4	5.20 A. M.
85	87.51	12.49	3.98	4.02	.04	......	William Manlius Smith	P. H. P.	August	14	5 A. M.
86	87.26	12.74	3.85	4.08	.23	......	William Manlius Smith	P. H. P.	August	14	5.30 A. M.
87	87.23	12.77	3.95	4.19	.24	......	William Manlius Smith	P. H. P.	August	14	5 A. M.
88	83.49	16.51	7.74	7.88	.14	......	William Manlius Smith	P. H. P.	September	4	....
89	87.08	12.92	4.10	4.33	.23	......	William Manlius Smith	P. H. P.	September	4	....

* Platinum dish filled with asbestos before milk was added, then treated as usual.

RESULTS OF ANALYSES OF SAMPLES OF PURE MILK — (*Continued*).

NUMBER.	Water.	Solids.	Fat by W. W. method.	Fat by Adams' method.	Dif.	Ash.	Chemist.	By whom taken.	Date.	Time of milking.
90	87.31	12.69	3.77	3.99	.22	......	William Manlius Smith	P. H. P.	September 4	....
91	86.65	13.35	4.15	4.35	.20	.72	Dr. Theodore Deecke	W. G. S	November 14	Evening.
92	86.10	13.90	4.95	5.20	.25	.70	Dr. Theodore Deecke	W. G. S.	November 14	Evening.
93	87.00	13.00	3 70	4.30	.60	.67	Dr. Theodore Deecke	W. G. S.	October 24	Morning.
94	86.53	13.47	....	3.66	......	.68	Vandenburgh	V. and M.	August 30	....
95	86.38	13.62	....	3.47	......	......	Vandenburgh	V. and M.	August 30	....
96	85.89	14.11	....	4.56	......	......	Vandenburgh	V. and M.	August 31	....
97	87.14	12.86	....	3.52	......	......	Vandenburgh	D., C. and G.	September 5	Evening.
98	87.08	12.92	....	3.72	......	......	Vandenburgh	D , C. and G.	September 5	Evening.
99	86.80	13.20	....	4.11	......	......	Vandenburgh	D., C. and G.	September 6	Morning.
100	87.14	12.86	....	3.28	......	......	Vandenburgh	D., C. and G.	September 5	Evening.
101	86.94	13.06	....	3.14	......	......	Vandenburgh	D., C. and G.	September 6	Morning.
102	85.59	14.41	....	5.32	......	......	Lattimore	G B.	September 20	6 A. M.
103	86.54	13.46	....	3.71	......	......	Lattimore	G. B.	September 20	7 A. M.
104	87.02	12.98	....	3.96	......	......	Lattimore	G. B.	September 24	5.30 P. M.
105	86.12	13.88	....	4.75	......	......	Lattimore	G. B.	September 24	7 P. M.
106	86.87	13.13	....	3.99	......	......	Lattimore	J. H. F.	September 23	A. M.
107	87.28	12.72	....	3.73	......	......	Lattimore	J. H. F.	September 23	A. M.
108	86.16	13.84	....	4.82	.....	......	Lattimore	G. B.	September 25	P. M.
109	86.60	13.40	....	4.32	......	......	Lattimore	G. B.	September 25	6 P. M.
Average	86.85	13.14	3.27	4.09	.33	.52				

RESULTS OF ANALYSES OF SAMPLE OF PURE MILK — (*Continued*).

Number.	RESIDENCE.	No. of cows in herd.	Sample from	Breed.	"Feed."	Water.
1	Troy, Rensselaer Co	29	6 cows	Natives	Brewers' grains, upland pasture	Running stream.
2	North Greenbush	27	6 cows	Natives	Rolling pasture	Running stream.
3	Stittville, Oneida Co	....	4 cows	Natives	Grass.	
4	Stittville, Oneida Co	....	4 cows	Natives.		
7	Watervliet	50	6 cows	Five natives, one Jersey	Buffalo corn, rolling pasture	Spring.
8	Watervliet	26	5 cows	Natives	Grains, upland pasture	Spring stream.
9	Bloomingrove	....	6 cows	Natives, mixed Holstein blood	Grains, swamp pasture	Swamp.
10	East Greenbush	30	7 cows	....	Grains, corn feed, cut grass	Spring.
11	Greenbush Heights	94	6 cows	Natives	Grains, corn feed, rolling pasture	Spring.
12	Albany	8	4 cows	Natives	Buffalo corn, lowland pasture.	
13	Albany	29	6 cows	Natives	Buffalo corn, rolling pasture	Running stream.
14	Pusankill	12	5 cows	Natives	Pasture	Creek.
15	Brunswick	....	6 cows	Natives	Swamp pasture	Swamp.
16	Watervliet	....	4 cows	Natives	Highland pasture	Town water-works.
17	Lansingburgh	....	3 cows	Natives	Highland pasture.	
18	Lansingburgh	....	4 cows	Natives	Highland pasture.	
22	Guil'erland	....	6 cows	Natives	Buffalo corn, barley sprouts, grass.	
23	Albany	4	4 cows	Natives	Grass, swamp pasture	Swamp.
24	Albany	....	7 cows	Natives	Pasture	Creek.
25	Guilderland	....	6 cows	Natives	Green peas, oats, Buffalo and boat corn.	Running brook.
26	Albany	14	3 cows	Natives	Buffalo corn, rolling pasture	Well.
27	Troy	3	2 cows	Natives	Grains and hay	City.
28	Troy	7	3 cows	Natives	Grains and hay	City.
29	West Troy	10	2 cows	Natives	Buffalo corn, flat pasture	Village.
30	Greenbush	17	3 cows	Natives	Grains, highland pasture	Spring.
31	Albany road	52	4 cows	Natives	Brewers' grain, corn, bran, upland past.	Spring.
32	Albany road	23	4 cows	Natives	Grains, Buffalo corn, upland pasture	Spring.
33	East Greenbush	100	6 cows	Natives	Grains, sprouts, corn meal, rolling past.	Spring.
34	East Greenbush	20	4 cows	Natives	Grains, rolling pasture	Spring.
35	East Greenbush	48	5 cows	Natives	Grains, pumpkins, upland pasture	Spring.
36	North Greenbush	35	6 cows	Natives	Grains, rye middlings, hay, no pasture.	Spring.
37	North Greenbush	17	5 cows	Natives	Grains, corn fodder, hay, no pasture	Spring.
38	North Greenbush	8	6 cows	Natives	Grains, middlings, bran, hay, no past're.	Spring.
39	East Greenbush	32	6 cows	Natives	Grains, sprouts, rye feed, pasture	Spring.

RESULTS OF ANALYSES OF SAMPLE OF PURE MILK—(*Concluded*).

Number.	RESIDENCE.	No. of cows in herd.	Sample from	Breed.	"Feed."	Water.
40	East Greenbush	25	6 cows	Natives	Grains, sprouts, rye feed, fodder corn	Spring.
41	Roots Corners	8	8 cows	Natives.		
42	Whitehall road	....	6 cows	Two Guernseys, four Holsteins.	Rye screenings, grains and grass	City water.
43	East Greenbush	17	4 cows	Natives	Car feed and highland pasture	Spring.
44	East Greenbush	106	6 cows	Natives	Corn stalks, brewers' grain, hay	Spring.
45	East Greenbush	17	3 cows	Natives	Brewers' grain, highland pasture	Spring.
46	Troy	...	3 cows	Natives	Mixed feed, hill pasture	City.
47	Greenbush	..	6 cows		Grains, corn feed, corn stalks, grass	Spring.
48	Greenbush	101	6 cows	Natives	Grains, rye, screenings, hay	Spring.
49	Greenbush	47	6 cows	Natives	Grains, grass, upland pasture	Spring.
50	Greenbush	47	6 cows	Natives	Grains, grass, upland pasture	Spring.
51	East Greenbush	40	6 cows	Natives	Grains, commercial wheat, middlings, hay, upland pasture	Spring.
52	Albany	20	4 cows	Natives	Grains, hay, fodder corn	City.
53	Normansville	22	6 cows	One Jersey	Car feed, fodder corn, hay, rolling past.	Creek.
54	No-mansville	41	6 cows	Natives	Grains, feed corn, hay, rolling pasture.	
55	Albany	....	6 cows	Natives	Grains, rye, corn meal, grass	City.
56	Fort Edward	14	6 cows	Natives	Grass	Brook.
57	Marion	12	10 cows	Natives mixed with Durham	Grass	Brook and river.
59	Albany	8	8 cows	Natives	Boat corn, grass	Well and brook.
60	Albany	8	8 cows			
61	Fort Edward	5	4 cows	Natives, little Jersey	Grass, flat pasture	Spring.
62	Fort Edward	7	4 cows		Grass	Creek.
63	Fort Edward	....	5 cows		Grass	Spring and brook.
64	Fort Edward	5	5 cows	Three Jerseys, two natives	Grass	Surface and well.
65	Fort Edward	....	5 cows	Natives	Grass	Running river.
66	North Greenbush	40	3 cows	Natives	Corn fodder, grains, upland pasture	Spring.
67	North Greenbush	14	3 cows	Natives	Corn fodder, grains, rolling pasture	Spring.
68	North Greenbush	21	5 cows	Natives	Corn fodder, grains, rolling pasture	Spring.
69	Troy	20	4 cows	Natives	Corn fodder, grains, rolling pasture	Spring.
70	Albany road	56	7 cows	Natives	Buffalo corn, hay, corn stalks	Spring.
71	Washingtonville	30	8 cows	Natives	Grass.	
72	Livingston Manor	25	6 cows	Natives	Grass.	
73	Delaware County	146	3 cows	Natives	Grass.	
74	Deposit, Broome Co	108	3 cows	Natives	Grass and Buffalo feed.	
75	Allabin, Ulster Co	26	6 cows	Natives	Grass.	
76	West Kill, Greene Co	10	6 cows	Natives	Grass.	
77	Monroe, Orange Co	35	6 cows	Belled cattle	Grass and two quarts of meal.	

78	Phillips, Putnam Co	21	3 cows	Natives	Grass, sprouts and corn fodder in small quantities.	
79	Fishkill, Dutchess Co	84	3 cows	Natives	One pint linseed meal, one quart wheat bran twice daily.	
80	Cortland, Westchester Co	30	3 cows	Natives	Barley, starch feed, corn fodder.	
81	Greenridge	53	6 cows	Grade Durhams and Holsteins	Grass, hay, corn meal, bran	Spring and brook.
82	Chenango County	8	8 cows	Six blooded, two grade Holsteins	Grass	Spring.
83	Chenango County	9	9 cows	Natives	Grass	Spring.
84	South Oxford	18	18 cows	Natives	Grass	Spring.
85	Coventryville	14	14 cows	Natives	Grass	Spring.
86	Coventryville	13	13 cows	Natives	Grass	Spring.
87	Coventryville	8	8 cows	Natives	Grass	Spring.
91	Frankfort	24	24 cows	Natives	Grass.	
92	Frankfort	16	16 cows	Natives	Upland pasture.	
93	Litchfield	18	18 cows	Natives	Grass.	
94	Attica, Wyoming Co	34	34 cows	Natives	Lowland pasture, wheat screenings	Spring.
95	Alexander, Genesee Co	13	13 cows	Natives	Rolling pasture.	
96	Alexander, Genesee Co	12	11 cows	Natives	Bottom land pasture.	
97	Erie county	15	15 cows	Natives	Rolling pasture, fodder corn, four quarts starch-meal	Spring.
98	Erie county	15	15 cows	Natives	Rolling pasture, dry meal and bran	Spring.
99	Erie county	15	15 cows	Natives	Rolling pasture, dry meal and bran	Spring.
100	Erie county	23	23 cows	Natives	Rolling pasture, meal and bran	Spring.
101	Erie county	23	23 cows	Natives	Rolling pasture, meal and bran	Spring.
102	Wheatland, Monroe Co	....	6 cows	Natives	Highland pasture	Well water.
103	Scottsville, Monroe Co	8	8 cows	Natives	Lowland pasture	Spring.
104	Penfield, Monroe Co	....	8 cows	Natives	Highland pasture	Well.
105	Penfield, Monroe Co	....	5 cows	Natives	Highland pasture	Well.
106	Fowlerville, Livingston Co.	....	6 cows	Durhams	Pasture	Running stream.
107	Fowlerville, Livingston Co.	6	6 cows	Five Durhams and one part J'rs'y	Pasture	Running stream.
108	Huron, Wayne Co	10	10 cows	Natives	Clover pasture	Well.
109	Huron, Wayne Co	7	7 cows	Natives	Pasture	Well.

SINGLE COW'S MILK.

NUMBER.	Water.	Solids.	Fat by W. W. method.	Fat by Adams' method.	Diff.	Ash.	Chemist.	By whom taken.	Date.	Time of milking.
1	86.95	13.05	4.58	4.81	.23	.67	R. D. Clark and E. J. Wheeler.	R. D. C	July 17	4.30 P. M.
2	85.54	14.46	4.50	4.97	.47	.62	R. D. Clark and E. J. Wheeler.	R. D. C	July 8	6 A. M.
3	87.49	12.51	3.99	4.14	.15	.71	R. D. Clark and E. J. Wheeler.	R. D. C	July 17	2 P. M.
4	86.46	13.54	4.42	4.47	.05	.64	R. D. Clark and E. J Wheeler.	R. D. C	July 29	1.30 P. M.
5	85.92	14.08	4.36	4.84	.48	.68	R. D. Clark and E. J. Wheeler.	R. D. C	July 29	1.30 P. M.
6	87.20	12.80	3.78	3.88	.10	.73	R. D. Clark and E. J. Wheeler	R. D. C	July 30	8 P. M.
7	86.64	13.36	4.94	5.16	.22	.64	R. D. Clark and E. J. Wheeler.	R. D. C	August 1	2.45 P. M.
8	86.71	13.29	4.06	4.27	.21	.69	R. D. Clark and E. J. Wheeler.	R. D. C	August 4	1 P. M.
9	86.62	13.38	4.33	4.82	.49	.65	R. D. Clark and E. J. Wheeler	R. D. C	August 5	2 P. M.
10	85.66	14.34	4.79	5.19	.40	.72	R. D. Clark and E. J. Wheeler.	R. D. C	August 11	P. M.
11	85.23	14.77	5.06	5.77	.71	.58	R. D. Clark and E J Wheeler.	R. D. C	August 19	3 P. M.
12	84.98	15.02	5.30	5.67	.37	.71	R. D. Clark and E. J. Wheeler	R. D. C	August 19	3 P. M.
13	87.72	12.28	3.53	4.00	.47	.63	R D Clark and E. J. Wheeler	R. D. C	August 22	3 P. M.
14	86.49	13.51	4.62	5.05	.43	.60	R. D. Clark and E. J. Wheeler.	R D. C	August 22	3 P. M.
15	86.93	13.07	3.74	4.24	.50	.70	R. D. Clark and E. J. Wheeler,	C. V. L	August 27	3 P. M.
16	86.56	13.44	3.69	4.33	.64	.76	R. D. Clark and E. J. Wheeler.	C. V. L	September 2	3 P. M.
17	87.99	12.01	3.09	3.46	.37	.66	R. D. Clark and E. J. Wheeler.	C. V. L	September 4	4 P M.
18	87.99	12.01	3.59	3.78	.19	.64	R. D. Clark and E. J. Wheeler.	R. D. C	September 18	3 P. M.
19	87.65	12.35	3.48	3.42	—.06	.63	R. D. Clark and E J. Wheeler	R. D. C	September 18	3 P M.
20	86.10	13.90	4.63	5 06	.43	.67	R. D. Clark and E. J. Wheeler	R. D. C	September 20	5.20 P. M.
21	85.24	14.76	4.88	5.28	.40	.68	R. D. Clark and E. J. Wheeler	R. D. C	September 20	6 P. M.
22	85.13	14.87	4.43	5.20	.77	.72	R. D. Clark and E. J. Wheeler.	R. D. C	September 24	3 P. M.
23	88.12	11.88	3.43	3.82	.39	.70	R. D. Clark and E. J. Wheeler.	R. D. C	September 24	3 P. M.
24	85.56	14.44	5.21	5.48	.27	.72	R. D. Clark and E J. Wheeler.	R. D. C	September 26	5.20 P M.
25	87.96	12.04	2.86	3.31	.45	.61	R. D. Clark and E. J. Wheeler	G. L. F.	September 26	6 P. M.
26	86.44	13.56	3.80	4.24	.44	.70	R, D. Clark and E. J. Wheeler.	R. D. C	October 2	....
27	86.94	13.06	3 51	4.05	.54	.71	R. D. Clark and E. J. Wheeler.	F. D. C	October 9	....
28	87.88	12.12	2.89	3.40	.51	.57	R. D, Clark and E J. Wheeler.	R. D. C	August 25	3 P. M.
29	87.02	12.98	....	3.40	......	.70	Vandenburgh	F. P. V	August 28	....
30	87.28	12.72	....	3.61	......	......	Vandenburgh	F. P. V	August 30	....
31	85.92	14.08	4.56	5.08	.52	.64	R. D. Clark	R. D. C	September 20	5.20 P. M.
Average	86.65	13.34	3.87	4.45	.36	.64				

SINGLE COW'S MILK — (*Concluded*).

Number.	RESIDENCE.	No. of cows in herd.	Sample from.	Breed.	"Feed."	Water.
1	Albany	8	1 cow.	Native	Buffalo corn, lowland pasture	
2	McKownsville, Albany Co	....	1 cow.	Native	Grass	
3	Albany	29	1 cow.	Native	Buffalo corn, rolling pasture	Running stream.
4	Guilderland	....	1 cow.	Holstein	Buffalo corn, barley sprouts, grass	
5	Guilderland	....	1 cow.	Native	Buffalo corn, barley sprouts, grass	
6	Albany	4	1 cow.	Native, Nellie Adams.	Grass, swamp pasture	Swamp.
7	Albany	....	1 cow.	Mixed Holstein	Pasture	Creek.
8	Guilderland	....	1 cow.	Holstein	Green peas, oats, Buf. and boat corn, grass	Running brook.
9	Albany	14	1 cow.	Guernsey, full blood	Buffalo corn, rolling pasture	Well.
10	Whitehall road	....	1 cow.	Guernsey	Rye, screenings, grains, grass	City.
11	Greenbush	....	1 cow.	Part Durham and Devonshire	Grains, corn feed, corn stalks, grass	Spring.
12	Greenbush	....	1 cow.	Holstein (grade)	Grains, corn feed, corn stalks, grass	Spring.
13	Greenbush	47	1 cow.	Holstein	Grains, grass, upland pasture	Spring.
14	Greenbush	47	1 cow.	Native	Grains, grass, upland pasture	Spring.
15	Albany	20	1 cow.		Grains, hay and fodder corn.	City.
16	Normansville	22	1 cow.	Native	Car feed, fodder corn, hay, rolling pasture	Creek.
17	Normansville	41	1 cow.	Native	Grains, feed corn, hay, rolling pasture	
18	Albany	....	1 cow.	Native	Grains, rye, corn meal, grass	City.
19	Albany	....	1 cow.	Native	Grains, rye, corn meal, grass	City.
20	Fort Edward	14	1 cow.	Holstein	Grass	Brook.
21	Fort Edward	1	1 cow.	One-half Jersey	Grass	Spring.
22	Albany	8	1 cow.	Native	Boat corn, grass	Well and brook.
23	Albany	8	1 cow.	Large native	Boat corn, grass	Well and brook.
24	Fort Edward	5	1 cow.	Durham, nearly full blood	Grass, flat pasture	Spring.
25	Fort Edward	7	1 cow.	Native	Grass	Creek.
26	Fort Edward	5	1 cow.	Two natives, three Jerseys	Grass	Surface and well.
27		....	1 cow.	One-half Jersey, one-half Ayershire.	Grass, corn stalks, four quarts gluc. meal.	Spring.
28	East Greenbush	40	1 cow.	Native	Grains, com. wheat, mid., hay, upl'd past.	Spring.
29	Buffalo	......	1 cow.	Native	Ground corn, oats, grains, hay, fod. corn.	City supply, Niagara.
30	Attica, Wyoming county.	....	1 cow.	Native	Lowland pasture, wheat screenings	Spring.
31	Marion	12	1 cow.	Part Durham	Grass	Brook and river.

	Water.	Solids.	Fat by W. W. method.	Fat by Adams method.	Diff.	Ash.
The average for the seventy herds from which we collected the samples	86.81	12.04	3.81	4.06	.40	.64
The average for the thirty-nine herds from other localities is	86.92	15.12	2.31	4.14	.19	.28
The average for all the herds (109) is	86.85	13.14	3.27	4.09	.33	.52
The average for the thirty-one single cows is	86.65	13.34	3.87	4.45	.36	.64
The total average is	86.80	13.19	3.40	4.17	.34	.54

It has been alleged that the difference in the amount of fat obtained by the two methods of analysis is greater in milk poor in fat, than in milk rich in that ingredient. For that reason we append the following ten analyses of milk comparatively poor in fat. It will be observed while the range of difference is not quite so wide, yet it varies greatly:

Water.	Solids.	Fat by W. W. method.	Fat by Adams' method.	Difference.	Ash.
89.46	10.54	1.63	1.93	.30	.65
89.37	10.63	1.16	1.44	.28	.70
88.26	11.74	2.56	2.78	.22	......
87.95	12.05	2.92	3.29	.37	.67
87.73	12.27	2.93	3.43	.50	......
87.58	12.42	2.70	3.06	.36	.71
88.05	11.95	2.97	3.38	.41	.73
88.30	11.70	2.19	2.69	.50	.72
88.24	11.76	2.33	2.77	.44	.74
87.94	12.06	2.68	2.98	.30	.66

Average 0.368

It will be observed that, of the whole number of samples analyzed, there are but two herds which do not furnish milk which in every particular fulfills the requirements of the legislative standard. These two samples contain sufficient fat and one contains only 0.01 per cent less solids than the standard requires which may be due to "error of analysis."

Of the thirty-one samples from single cows, it will be seen that but one contained less than three per cent of fat by the old process of analysis, and all contained considerably above three per cent of fat by the new.

Each of the twenty-nine samples of single cow's milk which we procured came from the poorest cow that could be selected from the herd.

It will also be observed that the difference in the amount of fat obtained by the two methods varies much. The minimum being 0.04 per cent, and the maximum being 0.86 per cent; and this variation is obtained by all chemists engaged in the work. The average of 109 analyses of pure milk being 0.33 per cent; of the whole 119 analyses (including abnormal milk) The average is 0.35 per cent.

This variation in the amount of fat obtained by the two methods, we believed to be due to the inaccuracy of the old method, but it will be seen from the following tabulated results of six duplicate analyses by each method that the variation among themselves is as great with one as it is with the other.

	Per cent.		Per cent.
Fat by W. W. method ..	3.52	Fat by Adams' method..	3.90
Fat by W. W. method ..	3.609	Fat by Adams' method..	3.979
Fat by W. W. method ..	3.54	Fat by Adams' method..	3.85
Fat by W. W. method ..	3.618	Fat by Adams' method..	3.936
Fat by W. W. method ..	3.467	Fat by Adams' method..	3.879
Fat by W. W. method ..	3.437	Fat by Adams' method..	3.944

The amount of fat obtained by the old process is greater when flat-bottomed dishes are used than when round; when large dishes are employed than when small.

The following table shows the result of analyses made in a tin dish whose diameter, on the bottom, was two and one-half inches, and in a platinum dish whose diameter, on the bottom, was one and one-half to one and three-fourths inches:

NUMBER.	Fat from capsule.	Fat from platinum dish.	Fat from coil.	Solids from capsule.	Solids from dish, platinum.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1..........	2.54	2.92	3.29	12.07	12.05
2..........	2.93	....	3.43	12.27	....
3.........	3.89	3.42	4.08	13.06	13.07
4..........	3.43	3.43	3.90	12.36	12.38
5..........	3.57	3.52	3.93	12.35	12.39

REMARKS.— No. 1 had been thoroughly aerated before bottling; No. 2 same as No. 1, but had not been aerated.

MILK ANALYSIS.

The method we have employed in this work is as follows: For the Wanklyn-Waller process we use flat-bottom platinum dishes from one and seven-eighths inches to two and one-eighth inches in diameter. The dish is weighed each time it is used, and five c. c. of the milk run in in the usual way. It is then weighed and placed on the water-bath for one and a half hours. Then placed in the oven and kept at a temperature of from 103 to 105 degrees C. for three hours. It is then weighed, replaced in the oven, and reweighed after twenty minutes to half an hour. This is repeated till constant weight is obtained.

In extracting fat we use sulphuric ether of a specific gravity of 0.725.

We prefer to begin with small quantities of ether and increase the amount each time till, towards the end, the dish is nearly filled with ether, instead of beginning with nearly filling the dish and ending with small quantities as is usually recommended; for the reason that the fat when in large quantities becomes deposited on the sides of the dish, both inside and outside, as the ether evaporates, and is removed with difficulty. However, it is always necessary to wipe carefully the upper part of the inside of the dish and the whole of the outside with clean white filter paper, cut sharp and clean in narrow strips, folded in so that no fluffing of the paper will take place. The ether is allowed to boil gently in the dish for from two to four minutes and poured off into a small clean beaker down a glass rod, as recommended by Dr. Babcock, of Boston.

This boiling and pouring off of the ether is repeated five or six times.

If there is any perceptible sediment in the bottom of the beaker, the ether is now carefully poured off and the sediment washed out with fresh ether and poured back into the dish and the ether is poured out of the dish down the rod again. The dish is now thoroughly rinsed with fresh ether and emptied down the rod and wiped with the filter paper while it is cool.

We do not pour the ether through a filter.

The fat is estimated by loss. We have tried to collect and weigh the fat, but it always gave a lower result owing to the inevitable loss of fat.

In taking the fat by the paper or Adams' method, we proceed as follows:

PREPARATION OF THE PAPER COILS.

We find that the weight of the paper is an important item. If too light the milk soaks all through it, making it difficult to handle the coil without loss; if too heavy it takes too long for absorption. We find the best working paper to be No. 598, S. & S's. This when cut in the regular size (two and one-half inches wide by twenty-two inches long) will readily soak up five c. c. of milk and leave a dry margin of about one-half an inch.

The coils are first extracted with ninety-five per cent alcohol, containing ten per cent of glacial acetic acid, in a Soxhlet apparatus for four or five hours, keeping the alcohol and acetic acid mixture constantly boiling. After being thoroughly dried, the coils are treated in the same way with sulphuric ether and again dried in an oven when they are ready for use.

Five c. c. of milk are run into an oval bottom platinum dish, weighed, and one end of the coil, after being rather loosely rolled up and held by a small tinned wire encircling it near the top with its free end curved into a loop, is placed into the milk at the center of and deepest part of the dish. A beaker glass is placed over all to keep out dust, etc. The milk is nearly all taken up by the coil in three or four minutes, when the remainder (generally but little) is made to go into the coil by taking hold of its dry end and wiping the bottom of the dish with the other.

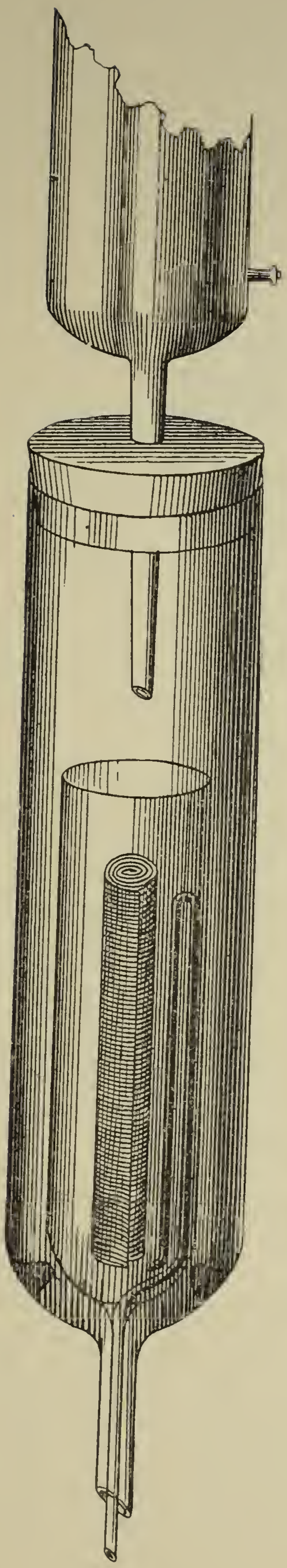
This wiping up of the unabsorbed portion of the milk from the bottom of the dish (the idea was given me by the chemists of the New York city board of health) is a great advantage, and overcomes to a very large extent the error of analysis, caused by the selective action of the paper on the liquid portion of the milk, leaving a residue largely solids.

By this manipulation and, especially if an oval bottom dish is used, all of the milk, except a small fraction of a drop, is taken up. The use of an oval bottom dish will also hasten the absorption and a porcelain dish will answer this purpose just as well.

Before rolling up the paper into a coil, we take hold of one end of it and shake it out well to free it from fluff, of which there is considerable, and which would be washed out by the action of the ether into the flask and count as fat.

The coil thus charged with milk is now hung up in the oven by the loop of the tin wire and allowed to remain at a temperature of 100 C. for one hour, when it is placed into an extractor made for this purpose. (See cut I.) We never allow the loaded coil to become perfectly dry; and soak it with ether as soon as it is ready. We much prefer to let it stand in ether, if, for any reason, the extraction is delayed. This lessens any oxidation that may take place.

Nothing but fat is determined from the coil. The other ingredients are obtained from a platinum dish in the old way.



CUT I.

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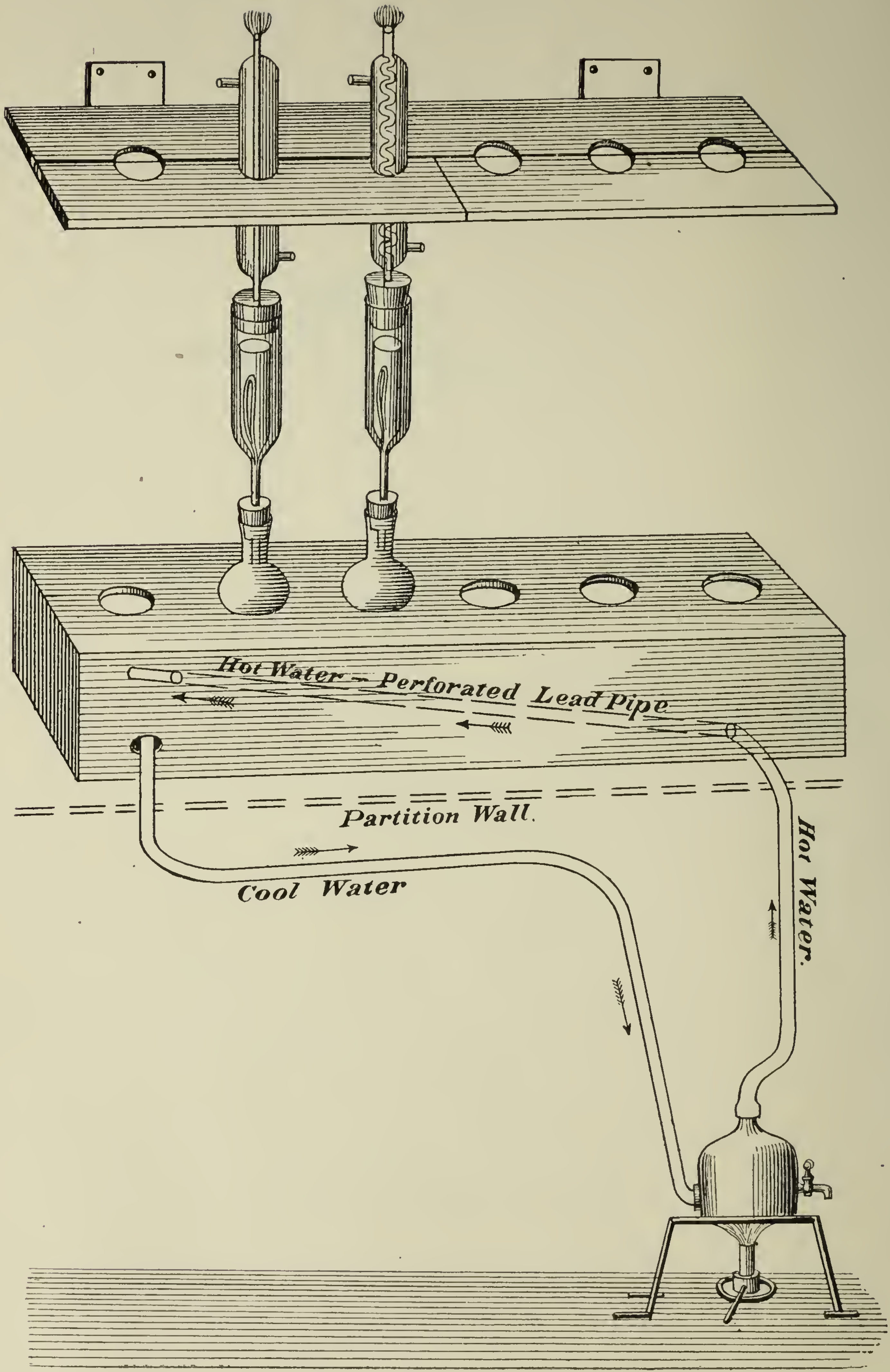
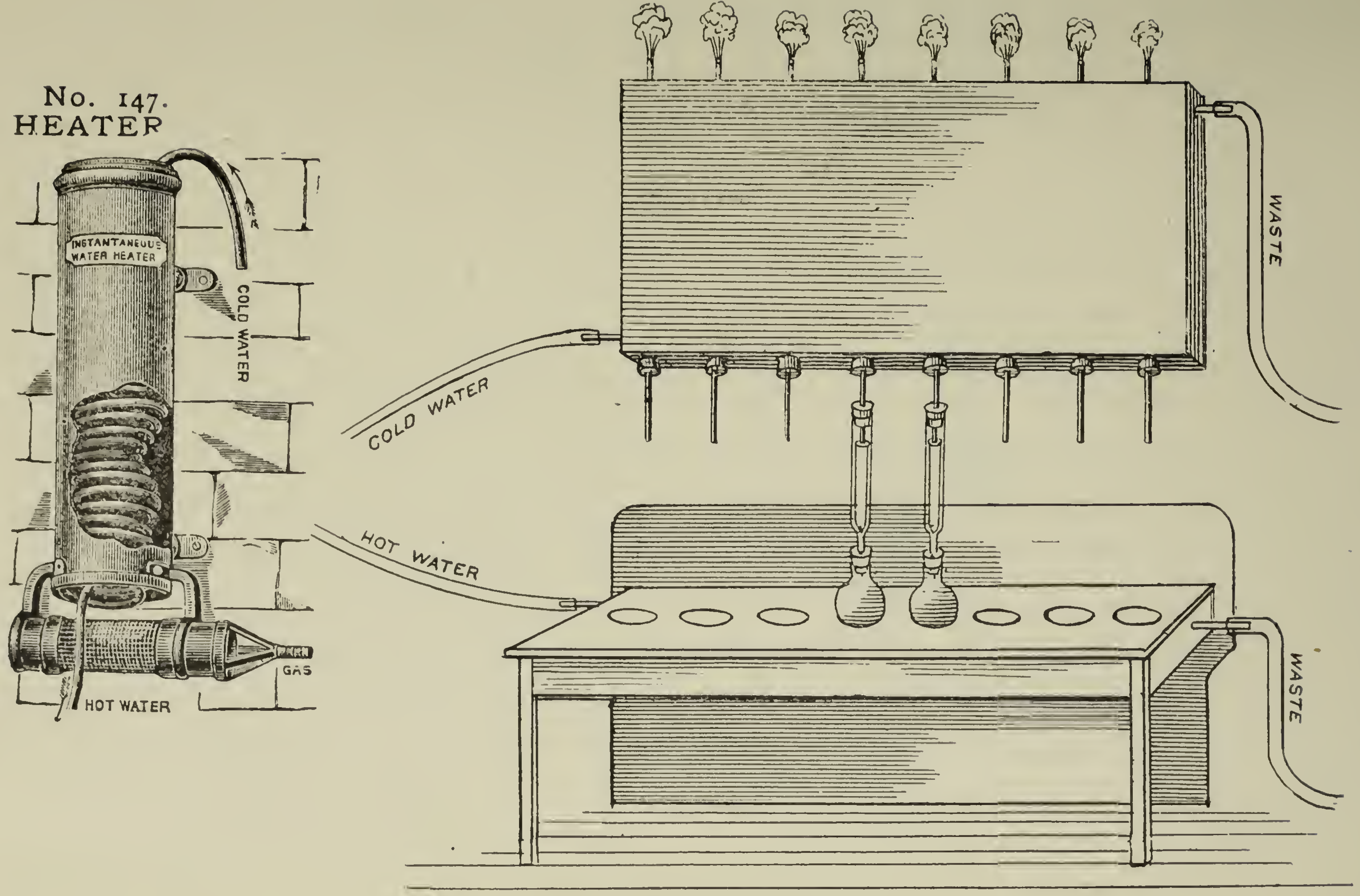

Hot Water – Perforated Lead Pipe
Partition Wall.
Cool Water
Hot Water.

CUT II.


No. 147.
HEATER
INSTANTANEOUS WATER HEATER
COLD WATER
GAS
HOT WATER
COLD WATER
HOT WATER
WASTE
WASTE

Cut III.

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The apparatus we use for heating the ether in the extractors is very effectual and simple, and comparatively inexpensive. It consists of, first, a copper boiler (see cut II) holding about two quarts, with a faucet running out of the bottom for the purpose of emptying it; second, a lead pipe ($\frac{3}{8}$) running out of the top, through a partition into the next room, entering a copper tank near the bottom and passing up through the length of the tank, terminating near its top. This portion of the pipe running through the tank is perforated, and the end of the pipe closed. Below this closed end, at the bottom of the tank, another lead pipe of the same size passes out through the partition to the boiler, entering the boiler near the bottom. The copper tank is about six inches wide, twenty-five inches long and four inches deep. Its top is closed with a loose cover, perforated with six holes two and one-half inches in diameter. This tank sets on a plane about two feet above the boiler. The apparatus is filled with water from the tank. As the water heats from the bottom it rises up and is forced up through into the tank, and the cold water descends from the other outlet of the tank, at the opposite end at the bottom of the boiler, thus keeping up a current of warm water, and which can be kept very evenly at the desired temperature.

Above the boiler is placed a rack for holding the glass condensers which, when connected with the extraction apparatus and flask, supports the whole. This, however, we intend to replace with a zinc tank, such as is used by Dr. Vandenbergh.

The following figure (see cut III) represents a cheap form of condenser contrived and used by Dr. Vandenbergh of Buffalo. It consists of a zinc tank, perforated at the bottom with as many holes as is needed. The upper end of the tank is open. A glass tube leading from the extraction apparatus is passed through the bottom of the tank by means of perforated stoppers. The tank is kept filled with cold water, in extremely hot weather ice can be used if necessary. It will be readily seen this is a much cheaper apparatus than several small glass condensers would be, and has the advantage of containing much more water, and can be made deeper, thus greatly extending the amount of surface to be cooled, and has the decided advantage of allowing the use of ice in extremely hot weather when ordinary city water is warm. It also shows an effective heating apparatus.

REPORT OF ELWYN WALLER, PH. D.

[School of Mines, Fifty-ninth street, New York city.]

JOSIAH K. BROWN, Esq., *State Dairy Commissioner:*

SIR.— I have the honor to report the following comparisons of results obtained on analyzing milk by the (so called) Waller-Wanklyn method and by the Adams' method, as officially recognized by the British Society of Public Analysts.

It is unnecessary here to more than allude to the fact that in the analysis of milk for purposes of government control, the determination of the percentages of water and of fat are usually all-important. A short description of the two methods may, however, be desirable. The difference is only in the determination of the butter fat. In the case of the W. W. method, after evaporating off the water, and determining it by loss, the fat is extracted from the dried milk solids, by repeated applications of ether, warming the ether up to boiling on each application. Six or eight applications are the usual number, though it is a practice with many analysts to dry the milk solids after five or six applications of the ether, and again submit it to extraction in order to make sure of a fairly exhaustive extraction. In the Adams method, a separate portion of milk is taken for the fat determination, which is soaked up in a prepared coil of paper, and after drying the extraction with ether (sulphuric or petroleum) is effected in an extractor on the Soxhlet principle, in which the material to be extracted is intermittently immersed in the ether an indefinite number of times (at least a dozen). By the action of the extractor the ether is boiled off from the fat which it has dissolved, and is condensed so as to drip into the material, from which it is automatically run off at intervals into the flask intended for the fat, carrying with it the dissolved fat.

In brief, the experiments were in two series. In the first, a comparison of the figures obtained by the two methods was chiefly sought, since it has been claimed that the Adams' method invariably gives results 0.5 per cent higher, than the W. W. method. The results did not bear out this assertion as a general rule. Incidentally the influence of the size and shape of the dishes used in the W. W. method, and the character of the fat extracted, received attention.

In the second series, a milk was taken, a portion of it diluted, and another portion skimmed, and then the whole milk. Diluted milk, cream and skimmed milk were subjected to analysis, to determine if possible which method gave the most consistent results.

FIRST SERIES.

The milks examined were marked as follows:

	Number.
Received from B. Van Valkenburgh, Esq., per W. W. Meeteer	5823
Received from B. Van Valkenburgh, Esq., per W. W. Meeteer	4800
Received from B. Van Valkenburgh, Esq., per W. W. Meeteer	5992
Received from B. Van Valkenburgh, Esq., per W. W. Meeteer	H 4917
Received from a client in New York	2497

The last sample (No. 2497) I found had been also examined by another chemist in the city, by the Adams' method. Upon my request, he communicated to me his results as follows: Water, 87.25 per cent; fat, 5.03 per cent.

The results obtained by myself are given in the following table. Each "extraction" implies several separate treatments with (sulphuric) ether. In the case of the W. W. method, five or six times — never more, except when marked "cont." In those cases the milk solids in the dishes were extracted in an apparatus on the Soxhlet principle. Mr. E W. Martin, of the New York health department, devised an apparatus in which this could be accomplished with a platinum dish. Where it is noted that dish "O" was used, this apparatus was employed. Mr. Martin also suggested the use of tinned lead dishes (such as are manufactured for bottle caps, and may be cheaply obtained). These, after drying off the water, may be pinched together so as to be placed in the ordinary extractor tubes. The dishes marked "L" in the table were of this character.

In the columns headed "Div." the percentages of fat were calculated from the actual weight of fat obtained; in those headed "Loss" they were calculated from the loss in weight of the milk solids.

MILK.	Method of extraction.	Dish used.	Water.	FAT.						Ash.
				ONE EXTRACTION.		TWO EXTRACTIONS.		THREE EXTRACTIONS.		
				Div.	Loss.	Div.	Loss.	Div.	Loss.	
No. 5823	W. W. cont	O	87.23	3.972	3.740	4.081	3.907	4.091	3.942	0.745
No. 5823	W. W.	S	87.34	3.628	3.531	3.721	3.727	3.746	3.748	
No. 5823	W. W.	R	87 31	3.854	3.741		3.798			0.794
No. 5823	Adams			4.249		4.267				
No. 5823	Adams			4.339		4.363				
No. 5823	Adams			*4.121						
No. 4800	W. W.	S	88.17	2.957	2.900	3.073	2.963	3.089	3.098	0.712
No. 4800	W. W.	V	87.93	2.977	2.905	3.049	2.969	3.081	3.054	0.711
No. 4800	W. W.	M	87.99	3.237	3.000	3.265	3.041			0.746
No. 4800	Adams			3.277		3.283				
No. 4800	Adams			3.407						
No. 5992	W. W.	L	86.48							
No. 5992	W. W. cont	O	86.47	4.244	4.111	4.284	4.131			0.753
No. 5992	W. W.	R	86.51	3.996	3.833	4.244	4.061	4.274	4.153	0.774
No. 5992	Adams			4.449		4.467				
No. 5992	Adams			4.458		4.518				
No. H4917	W. W. cont	L	87.03	4.215	3.748					
No. H4917	W. W. cont	L	†86.84	4.000	4.319					
No. H4917	W. W.	V	86.96	3.728	3.748	3.907	3.907	3.967	3.957	0.797
No. H4917	W. W.	M	86.92	3.686	3.686	3.855	3.825	3.894	3.864	
No. H4917	Adams			4.184						
No. H4917	Adams			4.258						
No. 2497	W. W.	L	87.389		4.475		4.583		4.593	
No. 2497	W. W.	V	87.173	4.721	4.572	4.885	4.671	4.905	4.711	0.713
No. 2497	W. W. cont	O	87.128	5.133	4.780					0.683
No. 2497	Adams			4.960		4.989				
No. 2497	Adams			5.015		5.025				
No. 2497	Adams			*5.151						
No. 2497	Adams			*4.994						

* Extracted through bone black.

† Treated as prescribed by Wanklyn — three hours on the water bath — not dried in the air bath until after the first extraction of the fat.

Perhaps the most noticeable feature in this array of figures, is that each successive extraction by either method takes out something more. Such appears to be the case, and I have been told of the experiment having been once made of twenty-five successive extractions. Of course, long before the last one was reached, the amount extracted was too small to be weighable, but on evaporating the ether, even of the last one, a perceptible amount was to be seen.

The size and shape of the dishes used in the W. W. method had a material influence, not only on the time required for drying, but also on the amounts of water and fat obtained. Several of those used were round-bottomed, *i. e.*, approximately hemispherical in shape, a form which is evidently disadvantageous for this work, since it tends to give a thick, and not readily penetrable layer of the milk solids in the center. The classes of dishes designated in the table were :

LETTER.	Capacity.	Bottom.	Diameter of milk solids.
	Ounces.		Inches.
O	....	Flat	$2\frac{3}{8}$
L	....	Flat	$2\frac{1}{2}$
S	$\frac{1}{2}$	Round	$1\frac{1}{4}$
V	1	Round	$1\frac{1}{2}$
R	2	Round	2
M	6	Round	$2\frac{1}{4}$

The flat-bottomed dishes, where the milk solids were spread over a circle of two to two and one-half inches in diameter, gave the best results and the quickest manipulation. It will be noted that, except in the case of the smallest round-bottomed dishes, the fat obtained by the W. W. method does not fall to 0.5 per cent below that obtained by the Adams, and, as a rule, that the thinner the milk solids on the bottom of the dish, the closer the results.

The fat extracted in these operations was examined. About twenty-five c. c. of hot water and two drops of ammonia were added to each lot of fat, and after warming a short time this was filtered, the solution again heated until its alkalinity was very faint, and, after filtering, it was tested — one lot with a few drops of mercuric nitrate acidified with nitric acid; another lot with potassium ferrocyanide strongly acidified with acetic acid — tests for albumen. Several of the lots of fat afforded solutions by this means which gave a decided turbidity with the mercury or ferrocyanide solution; with others it was fainter, and with others again it was practically nil. It was most marked in the case of the fat extracted by the Adams' method; less so in that from the W. W. method, where the extraction had been pushed far, and, as a rule, slight or imperceptible in cases of moderate extraction by the W. W. method. The inference seemed to be that in extracting the milk solids with ether, some albumen or albuminoid was extracted with the last portions of the fat.

Some Adams' extractions were made through bone-black (previously exhausted with ether) in order to see whether the albuminous material would be held back by the bone-black (Nos. 5823 and 2497). Very little if any effect of the kind was observed. Several attempts were made to determine the amount present in the fat, by the usual method for estimation of albuminoids, (converting the nitrogen therein to ammonia, determining that, and then calculating the corresponding amount of albumen). The results, however, were irregular and unsatisfactory. The amount of albumen present in the fat from the Adams' method *seemed* to be about 0.1 per cent of the original milk, but this could not be positively asserted. The conclusion reached was that the paper of the Adams' coils had absorbed small amounts of ammonia salts from the air of the laboratory, and thus caused the irregular results.

It has been noted in the examinations of flours and articles of that kind, that unless the material is completely dried, ether will always extract some albuminoid material along with the fat, and this has no doubt a close connection with the phenomena observed, since it is well known that it is practically impossible to keep paper absolutely dry in ordinary air, and the Adams' coils present quite a surface for the absorption of moisture. Many analysts also follow Mr. Adams' recommendation to only 'rough dry" the coils, which might aggravate this tendency.

SECOND SERIES.

A sample of milk was purchased, and the specific gravity taken. A portion was then taken and diluted with exactly two measures of water. The original milk and the diluted sample were then analyzed by both processes. The results were :

Specific gravity of original milk, 1.0325.

Analysis.

(By W. W. method.)

	Water.	Solids.	Fat.		Solids not fat.
			Div.	Loss.	
Original milk	87.596	12.404	3.497	3.641	8.907
Dilution	95.963	4.037	1.228	1.218	2.809
Calculated for dilution	95.777	4.223	1.190	......	3.033
(By Adams' method).					
Original milk	87.596	12.404	3.858	......	8.546
Dilution	95.963	4.037	1.450	......	2.587
Calculated for dilution	95.777	4.223	1.313	......	2.910

In the analysis of the original by W. W. method it will be noticed that the "fat by loss" exceeds that by direct weight by 0.144 per cent. If we assume this to be water not quite removed until after extracting the fat (which seemed exceedingly probable), and correct accordingly, the above figures would show:

(By W. W. method.)

	Water.	Solids.	Fat—Div.	Solids, not fat.
Original milk	87.740	12.260	3.497	8.763
Dilution	95.963	4.037	1.228	2.809
Calculated for dilution	95.826	4.174	1.190	2.984
(By Adams' method.)				
Original milk	87.740	12.260	3.858	8.402
Dilution	95.963	4.037	1.450	2.587
Calculated for dilution	95.826	4.174	1.313	2.861

In this case the W. W. method gives results closer to the calculation (0.038 high) than does the Adams' method (0.137 high). The assertion that the W. W. method extracts less fat than the Adams' (proportionately) when the amount is small, is not borne out by the facts in the present instance, the per cent of fat found in the diluted sample being fully as large as that called for by the calculation.

Another portion of the (well mixed) milk was weighed out in a small stoppered globe provided with a stop-cock below. After standing quietly for about three hours for the cream to rise; the globe was again weighed. The skim-milk was then run off through the stop-cock into a beaker, and the globe and cream weighed. The cream was run into another beaker and poured back through the globe a few times in order to attain uniformity of composition. The cream and skim-milk were then analyzed by both processes. The data and figures obtained were as follows:

	Grammes.
First weight of original milk	105.0065
After cream had raised (three hours)	105.0020
Weight of cream	9.4330
Weight of skim-milk	95.5690
Volume per cent of cream in another portion standing by the globe three hours	5 per cent

ANALYSIS.

(*By the W. W. method.*)

	Water.	Solids.	Fat.		Solids not fat.
			Div.	Loss.	
Cream.	77.866	22.134	14.636	14.679	7.498
Skim-milk	88.668	11.332	2.424	2.468	8.908

Or, assuming as before that the excess of fat by loss really represents water previously unexpelled, and correcting:

	Water.	Solids.	Fat.		Solids not fat.
			Div.	Loss.	
Cream.	77.909	22.091	14.636	......	7.455
Skim-milk	88.712	11.288	2.424	......	8.864

Calculation.

These results would indicate (by original percentages):

	Solids.	Fat.	Solids not fat.
	Grammes.	Grammes.	Grammes.
In 9.433 grammes cream.......... ...	2.0879	1.3806	0.7073
In 95.569 grammes skim-milk.........	10.8299	2.3166	8.5133
Summary.	12.9178	3.6972	9.2206

Or, by corrected percentages:

	Solids.	Fat.	Solids not fat.
	Grammes.	Grammes.	Grammes.
In 9.433 grammes cream	2.0838	1.3806	0.7032
In 95.569 grammes skim-milk	10.7878	2.3166	8.4712
Summary	12.8716	3.6972	9.1744
In 105.002 grammes milk (original)....	13.0244	3.6719	9.3525
In 105.002 grammes milk (corrected) ..	12.8732	3.6719	9.2013

ANALYSIS.

(*By Adams' method.*)

	Water.	Solids.	Fat.	Solids not fat.
Cream.........	77.866	22.134	14.511	7.623
Skim-milk	88.668	11.332	2.731	8.601
Or correcting the water as before:				
Cream........................	77.909	22.091	14.511	7.580
Skim-milk	88.712	11.288	2.731	8.557

CALCULATION.

(By original percentages.)

	Solids.	Fat.	Solids not fat.
	Grammes.	Grammes.	Grammes.
In 9.433 grammes cream…………	2.0879	1.3688	0.7191
In 95.569 grammes skim-milk………	10.8299	2.6100	8.2199
Summary……………………	12.9178	3.9788	8.9390

(By corrected percentages.)

	Solids.	Fat.	Solids not fat.
In 9.433 grammes cream…………	2.0838	1.3688	0.7150
In 95.569 grammes skim-milk………	10.7878	2.6100	8.1778
Summary……………………	12.8716	3.9788	8.8928
In 105.002 grammes milk (original)…	13.0244	4.0510	8.9734
In 105.002 grammes milk (corrected)…	12.8732	4.0510	8.8222

These results, as they stand, tend to show each method to be fairly consistent with itself, though the figures by the W. W. method, come a little closer to one another than by the Adams. The sum of the fat found in cream and skim-milk by the W. W. method is 0.0253 grammes in excess of that calculated from the percentages on the original milk. In the case of the Adams' method, it falls short by 0.0722 grammes.

The fat found in the cream by the Adams' method is lower than by the W. W. method, instead of higher, as is usually the case. This is no doubt due to the selective action of the paper of the coil, which absorbs water more readily than fat, a fact which was quite apparent in the course of this analysis, the cream being absorbed with much more difficulty than any of the other materials analyzed.

CONCLUSIONS.

Generalizations from a small number of experiments may be possibly erroneous, but so far as this investigation has gone, the results may be summed up as follows:

1. For convenience and efficiency, flat-bottomed dishes two to two and one-half inches in diameter are the best.

2. The percentages of water ordinarily obtained in the examination of milks is liable, in many cases, to be too low rather than too high.

3. In extracting butter fat from milk solids, no method can be regarded as absolutely complete in its action.

4. In these extractions, when pressed beyond a certain point, something not fat — probably of an albuminous character — is extracted with the fat. The tendency in this direction is greater with the paper coil of the Adams' process than where the milk solids have been spread over the bottom of a dish. Whether this material not fat is insufficient in amount to materially affect the result is uncertain. It seems, however, quite possible that the Adams' method may give results higher than the truth in consequence.

5. The Adams' method usually, though not always, gives higher results than the W. W. method, but not results 0.5 per cent higher, if the latter method is properly conducted in a dish of suitable form and dimensions.

6. With cream the Adams' method may give low results unless some device (dilution or something of that sort) is adopted.

7. Differences of 0.2 to 0.3 per cent may occur in the results by either process.

Respectfully submitted.

ELWYN WALLER, Ph. D.

Dr. Babcock, of the New York Experimental Station, a few years ago (1883) recommended the use of asbestos as an absorbent. He used it by placing it both in the bottom of a platinum milk dish and in a glass tube. When placed in a platinum dish the analysis was proceeded with in the usual way.

The glass tube used was an ordinary test tube with its closed end perforated. Sufficient quantity was used to absorb five grammes of milk.

The use of asbestos would be preferable to paper; for, by employing a metallic tube, the analysis could be made continuous and thus save much time and labor. We are having tubes made with which we intend to experiment with this object in view.

We have made as many analyses with the use of asbestos as our time would permit, for the purpose of comparing the results with the paper method.

The following table presents four analyses comparing the results obtained by placing asbestos in the bottom of a platinum milk dish, using about four grammes of short-fibered asbestos, with the Adams' method; and, also, with a platinum dish alone without the use of any absorbent:

Number.	Fat from dish partly filled with asbestos.	Fat from paper coil.	Fat from dish containing no asbestos.	Solids from dish containing asbestos.	Solids from dish containing no asbestos.	Water from dish containing asbestos.	Water from dish containing no asbestos.	Ash from dish containing asbestos.	Ash from dish containing no asbestos.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1....	4.65	5.20	4.43	15.06	14.87	84.94	85.13	.74	.72
2....	2.82	3.82	3.43	12.01	11.88	87.99	88.12	.73	.70
3....	3.47-3.57	4.13	3.63	13.40-13.40	13.28-13.28	86.60-86.60	86.72	.62-.59	.60
4....	3.35-3.66	4.08	3.42	13.19-13.18	13.07	86.81-86.82	86.93	.71-.71	.68

It will be observed that the use of asbestos in an ordinary milk dish, allowing the milk to be soaked up by it, gives less fat in most of these analyses than the dish without asbestos.

No doubt more fat would be obtained if, after drying, the asbestos was thoroughly broken up in the dish; but this would be attended with such danger of a loss of substance, unless but very little asbestos, or a much deeper dish than the ordinary was used, that it seems impracticable to us.

The following table gives the results obtained from the same sample of milk by the W.W., paper, and asbestos (in tube) methods:

Number.	DATE	Fat by W. W. method.	Fat by Adams' method.	Fat by asbestos in tube.	Solids by W. W. method.	Solids by asbestos in tube.	Water by W. W. method.	Water by asbestos in tube.
1	October 21	3.87	4.22	4.23	13.47	13.40	86.53	86.60
2	November 28.........	3.42	4.08	3.93-3.89	13.07	12.899-12.96	86.93	87.10-87.04

It is seen from these results that when asbestos is placed into a tube and extraction made in a Soxhlet apparatus, the amount of fat obtained is practically the same as that obtained from the paper coil or Adams' method.

The asbestos we used in these experiments was short fibered and had been used for milk analysis by Prof. Lattimore, who kindly furnished me with it. It seems to be better adapted to absorb the milk the oftener it is used. The long fibered asbestos matted together so firmly that it was difficult for the ether to penetrate it and did not give as good results.

In our experiments we used simply an ordinary small-sized test-tube, three-fourths of an inch in diameter, drawn out from about two and one-half inches from the top and cut off, leaving the opening as large as we could and retain the asbestos. We first placed into it a small disk of filter paper, upon which the asbestos was placed to about an inch and one-half in depth, gently pressed down so as to leave no vacant spaces between the particles of asbestos. The tube with the asbestos is then placed into an oven at a temperature of 105 degrees C. and allowed to thoroughly dry. It is then cooled and weighed, after which five c. c. of milk is slowly run on to the asbestos, taking pains to keep the milk from running down between the sides of the tube and the asbestos. The tube is then hung up into an oven by a wire twisted around

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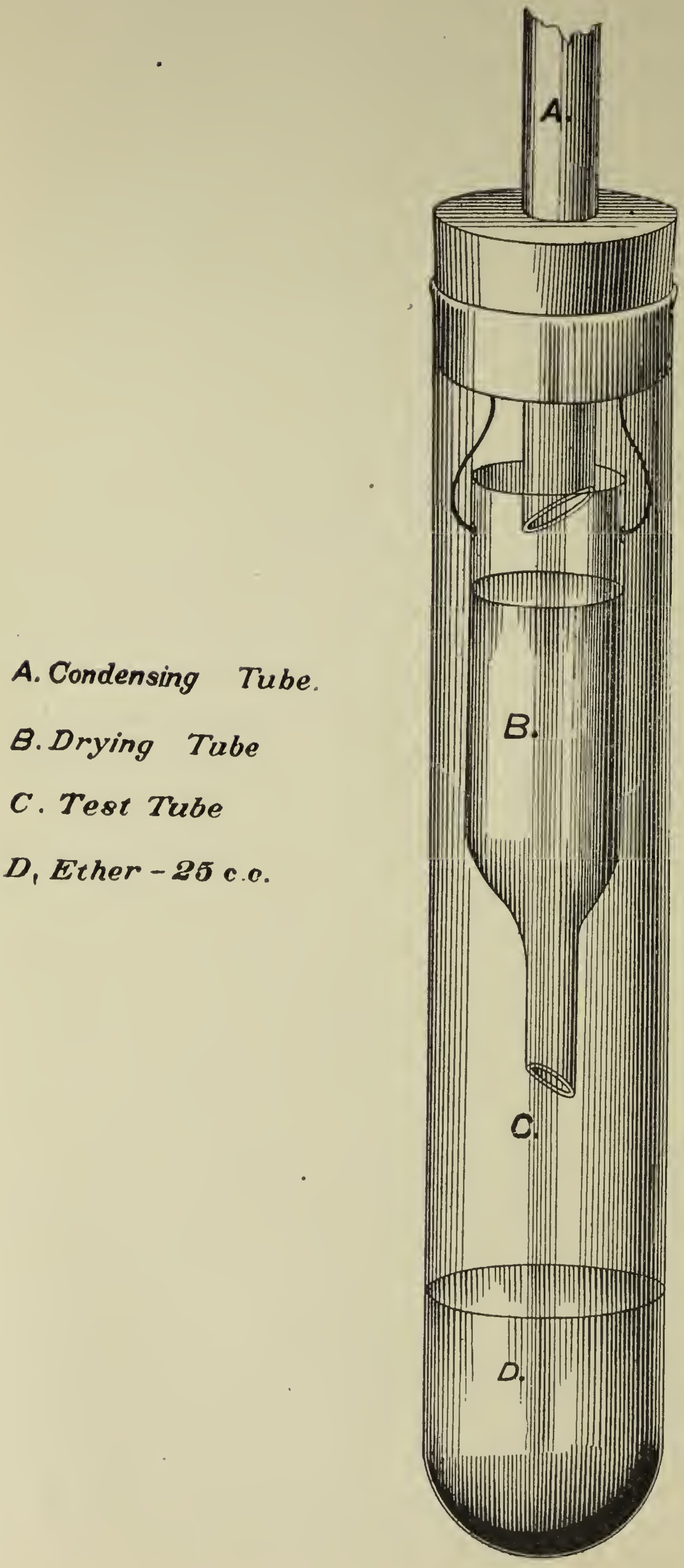

CUT IV.

under the flaring end of the tube and curled over at the free end into a loop. It is there left for about three hours, when it is repeatedly weighed until the weight becomes constant. We have had no difficulty of obtaining constant weight after from three to four hours, which is as quickly as it can be obtained with the dish in the old method. The water is calculated from loss.

The tube is now placed in the extraction apparatus already described, and the fat extracted in the same manner as from the paper coil. The fat is weighed in the flask.

Prof. Lattimore, of Rochester University, also prefers the use of asbestos in a tube to the paper method, and claims to get practically the same results. The following is his description of the way he uses asbestos in milk analysis:

APPARATUS FOR THE ANALYSIS OF MILK.

By Dr. S. A. Lattimore, Professor of Chemistry in the University of Rochester.

The apparatus used in this laboratory during the last four years for the analysis of milk is of simple and inexpensive character, and has proved highly satisfactory, both as to facility of manipulation and accuracy of results. Its small size renders it easy to arrange a series of any desired number, with but one condensing tank and one water-bath, whereby several samples may be simultaneously analyzed with great economy of time.

The Apparatus.

[See cut IV.]

1. The drying tube, as shown of real size in the sketch, is 2 cm. wide, with a cylindrical body 5 cm. long, drawn out at the extremity 4 cm. longer, and terminating in a tube of 5 mm. wide and cut obliquely, the whole tube being 9 cm. long and weighing about 10 grammes. Near the large end two small holes are pierced opposite each other.

2. A drying oven of ordinary form, having a constant water supply.

3. A vertical condenser with spiral coil of glass or block-tin tube and with constant water supply and overflow. The lower end of the condensing tube, cut obliquely, passes through a soft close-grained cork, to the lower side of which two elastic wire-

hooks are attached. By an easy movement the drying tube is pressed between the hooks, which enter the holes in its opposite sides, thus suspending it exactly under the end of the condensing tube.

4. A test tube 18–20 cm. long and 4.5–5 cm. wide which slips on to the cork, thus inclosing the drying tube air-tight.

5. An ordinary water-bath. When a series is to be used, an elongated copper trough capable of being raised and lowered is used.

6. Several Bunsen lamps arranged as in a combustion furnace.

7. An aspirating pump.

8. As an absorbent to furnish extended surface and thus promote first the evaporation of the water, and subsequently the extraction of the fat, I have employed with great satisfaction asbestos, which was first brought to my notice as an absorbent by Dr. S. M. Babcock. The more brittle or pulverizable specimens of this mineral, as well as those of very flexible or silky fiber, are not suited for this use. Specimens are chosen with somewhat coarse and brittle fiber capable of being crushed into pulp. From this the finest part or dust is removed by a sieve or by elutriation. After thorough ignition it is ready for use. A quantity may be prepared at one time and preserved in an air-tight jar. The asbestos pulp thus prepared freely absorbs the milk and from its coarseness, as soon as the first stages of drying are passed, presents a porous mass through which the hot air is easily drawn and through which, in the subsequent process of extraction, the hot ether percolates freely.

9. Petroleum ether, deodorized, with boiling point of 25°–45° C.

THE PROCESS.

1. The drying tube is first marked by writing with ordinary ink upon the glass the number or other designation of the sample, then a very small flock of dry, ether-washed cotton is placed in the bottom of the large part to prevent the loss of any fibers of asbestos. The tube is next filled within 1 or 2 cm. of the top with asbestos pulp slightly settled by gently tapping. The tube is placed in a rack, carried to the balance-room, suspended by a counterpoised hooked wire from the end of the balance beam, weighed and the weight entered in the record.

The sample of milk is taken in the usual manner in a 5 c. c. pipette and allowed to flow slowly upon the pulp, the tube meantime being constantly turned to equalize the distribution of the milk throughout the mass of the asbestos pulp. This step being successfully accomplished, the tube is again weighed as before and the weight recorded.

2. *Drying.*— The drying tube is now connected by means of a small rubber tube with the aspirating pump and laid on the floor of the drying oven. When it is desirable to analyze several samples at once, a number of tubes may be connected with a common reservoir, which in turn is connected with the pump. A low wide jar with a large rubber stopper pierced with pieces of glass tube, on to which the rubber tubes may be slipped, serves this purpose well. The temperature of the oven is brought to 100° C. and the pump started, very gently at first, but with greater force after thirty minutes. The time required for complete desiccation depends, of course, upon the permeability of the mass of pulp and the capacity of the pump. The process is usually complete in two or three hours. To demonstrate this point, the tubes are cooled in a desiccator and weighed, then returned to the oven and aspirator for thirty minutes, cooled and weighed a second time, repeating, if necessary, until no further loss of weight occurs. The difference between the first weight and the latter is due to loss of water by evaporation.

3. *Extraction of the fat.*— This is accomplished by placing the drying tube in any one of several common forms of extraction apparatus, such as Soxhlet's or Knofler's. My own experience has led me to prefer a simpler and less fragile arrangement, namely, a common test tube of suitable size. The tube containing the dry milk solids is attached to the lower end of the vertical condenser by the wire hooks previously described and shown in the sketch. Twenty to twenty-five c.c. of petroleum ether, with a few fragments of pumice-stone or broken glass, are placed in the test tube, which is slipped firmly on to the cork so as to surround and inclose the drying tube. The water-bath is placed in position and heat is applied until the ether begins to distill rapidly in drops, or even in a stream, from the end of the condensing tube, percolating the contents of the drying tube. When the heat is once properly regulated, no further attention is required. After two or three hours, according to the rate of distillation, the process is interrupted, the tube removed, returned to the drying oven, connected for a few minutes with the aspirating pump to

remove the last traces of ether, cooled and weighed as before, One or two short repetitions of the extraction process suffices to secure a constant weight and complete the analysis.

SUMMARY.

The objects sought in the arrangement of the apparatus and process thus described are the following:

1. Simplicity of construction and manipulation.
2. All determinations are made on one portion of milk.
3. The process of drying and extraction once started may continue for hours without attention.
4. No transfer of the material from one piece of apparatus to another.
5. Economy of ether by having but one cork joint in the apparatus instead of two, as in most extractors, and by the substitution for a flask of a test tube, in which 20–25 c. c. of ether are sufficient usually for the extraction of two samples, since, with an efficient condenser, the loss of ether may be reduced almost to zero. Should it become too much saturated with fat, fresh ether may be easily introduced at the upper end of the condensing coil. which should be protected by an inverted test tube.
6. Chiefly to employ an absorbent for the milk, and a solvent for the fat, neither of which can possibly introduce into the process a trace of moisture. Petroleum ether and freshly-ignited asbestos pulp fulfill these requirements.

THE REYNOLDS LABORATORY, UNIVERSITY OF ROCHESTER, *December* 8, 1890.

CONTRIBUTION FROM THE LABORATORY OF THE AGRICULTURAL EXPERIMENT STATION OF CORNELL UNIVERSITY.

By H. SNYDER, Assistant Chemist.

1. The standard method of analysis used.
2. Comparison of the abestos and paper methods.
3. Composition of milk from Experiment Station Farm.

The standard method of analysis used for the determination of fat in milk, is Dr. Babcock's gravimetric asbestos method. The best quality of asbestos is obtained and washed with a two per

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Fig. 1

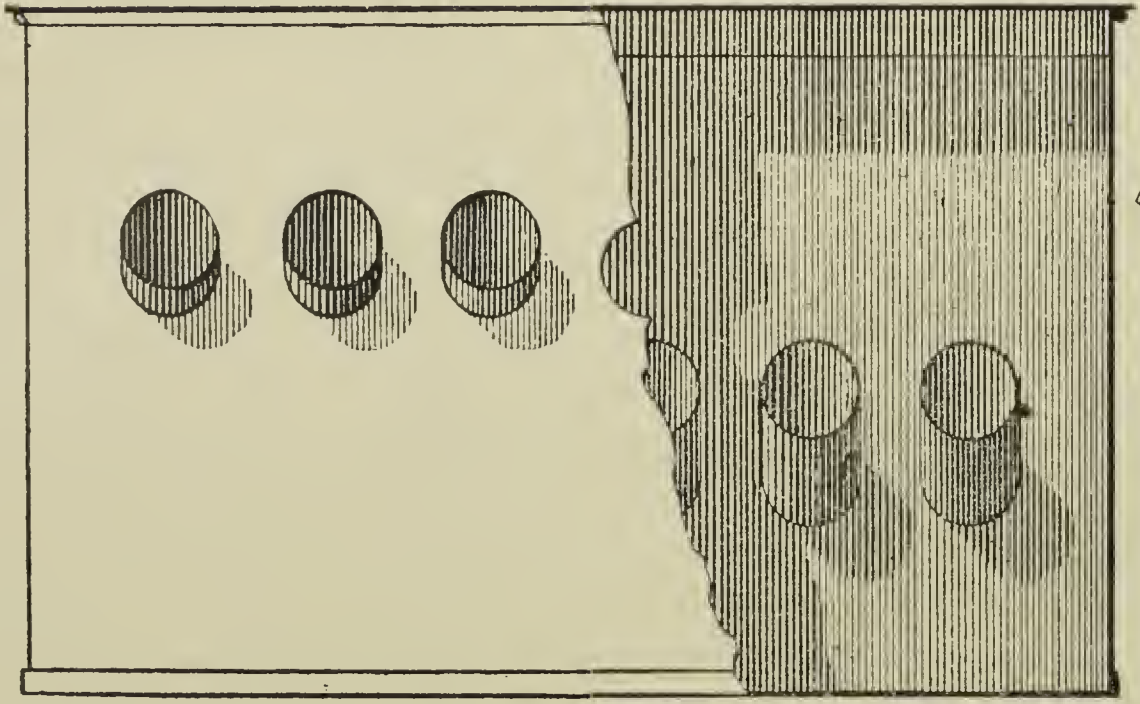


Fig. 2

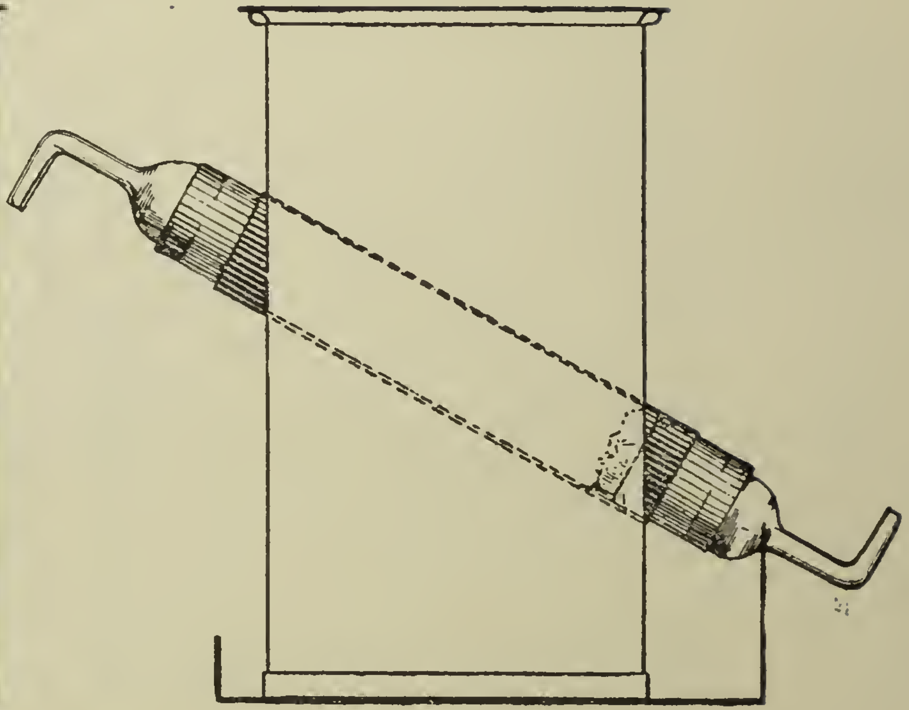


Fig. 3

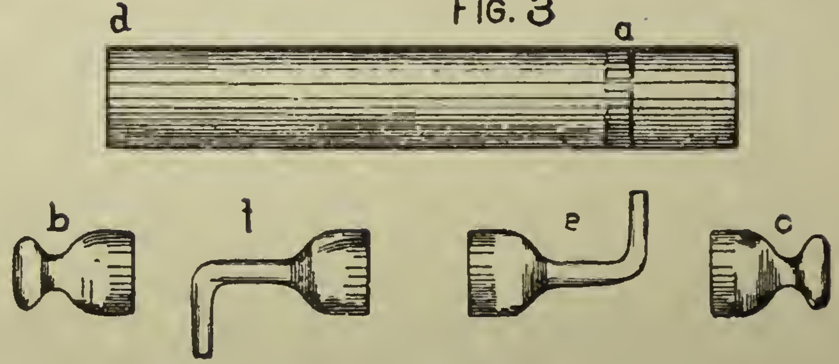
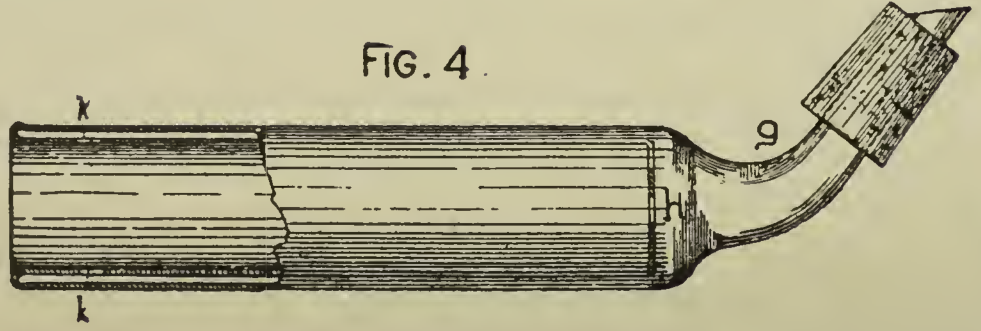


Fig. 4



Cut V.

cent solution of acetic acid, and then with distilled water. The asbestos, after drying, is ignited in a platinum dish, and then picked apart into long threads. Drying and extraction tubes devised by Prof. Caldwell, and described in bulletin XXII of this Station are used instead of test tubes as in Dr. Babcock's method. (See cut V, figs. 2 and 3).

The following is the description from bulletin XXII.

"*A New Apparatus for Drying Substances in a Current of Air or Hydrogen, and for the Extraction of the Fat.*"

"The construction of the copper bath is made plain by the figures 1 and 2; it is 24 cm. long, 15 high, and 8½ broad; it can be made at any respectable tin shop. This bath stands in a piece of sheet copper bent up at right angles along the sides, as shown in the end view, figure 2; on one side, this vertical part need not be over 1 cm. high, just enough to project a little up the side of the bath which rests snugly against it, *not* as shown in the figure; along the other side it projects upward, at a little distance from the side of the bath, about 15 mm. and to about the height of 4 cm.; opposite each of the tubes of the bath a slot is cut in this vertical part, which serves then as a shoulder against which the glass tube rests when in place, to keep it from slipping down and out of position.

"The tube, figure 3, for containing the substance has at the zone *a* three small projections on the inner surface, which support a perforated platinum disk of rather heavy platinum foil carrying the asbestos filter. This tube is 13 cm. long and 23 mm. inner diameter, and weighs, with its close stoppers, about 30 gms. The stoppers are removed, a band of thin asbestos paper is wound around the end *d* of the tube, a little behind the slight shoulder at the rim, as many times as may be necessary to make a snug fit when this tube is slid down into the copper tube in the bath; thus the circulation of air between the glass and the copper tubes is prevented that would retard the heating of the former; the stopper *e* is put in the lower end of the tube, for connection with the hydrogen supply, and the stopper *f* in the upper end; this latter stopper is connected by rubber tube with a glass tube slipping easily through one of the holes of a rubber cork closing a small flask, containing a little sulphuric acid, into which this tube just dips; when as many tubes as are to be charged are thus arranged in place and the air or hydrogen is turned on, the even flow of the current through the whole number is secured by raising or lowering, a very little, the several tubes through which the outflow passes, so as to get a little more back pressure for one, or a little less for another, as may be found necessary. When the drying is supposed to be completed, the tubes are weighed again with their close stoppers, and so on."

The tubes are prepared by putting in the perforated disk and then a layer of cotton about a centimeter in depth. The asbestos is packed into the tubes so as to form a column not so dense but that the ether can easily penetrate, and still compactly enough so that all of the milk will be absorbed in the upper two-thirds of the tube. Six tubes prepared in this way are dried to constant weight in a current of air and are then ready for use. The sample of milk is weighed out with a weighing pipette. The milk is run out slowly so as to allow time for it to be absorbed. The tubes are dried in the way as described by Prof. Caldwell in the article as mentioned. The time required to get constant weight is usually about an hour. The difference in weight being due to the amount of water in the sample. Working with the tubes, the solids can be determined with much ease and accuracy; the dried sample of milk is entirely excluded from the air, being simply in a glass-stoppered weighing tube. The tubes are then put into an extraction apparatus, either a return flow or a Soxhlet's extractor, and exhausted with ether until, by test, no more fat is obtained.

The fat is dried to constant weight in hydrogen.

COMPARISON OF THE ASBESTOS AND PAPER METHODS.

The asbestos method, as thus given, has been compared with Adams' paper method, and with the following results:

	Asbestos.	Paper.		Asbestos.	Paper.
Fats	3.96	3.88	Solids	13.39	13.37
Fats	4.27	4.24	Solids	13.16	13.24
Fats	3.77	3.73	Solids	12.80	12.91

The best quality of paper was obtained, washed with dilute acetic acid (two per cent) alcohol, and then extracted twelve hours with ether. Along with the milk determinations a blank was carried, which gave .0079 gms of extract from the coil. This amount was deducted from each weight of fat obtained.

The asbestos appears to be preferable to paper in the following ways:

1. No corrections are necessary as for the coils.
2. The paper is more hydroscopic, and can not be weighed in tubes as the asbestos.
3. The asbestos can be ignited and all organic matter destroyed.
4. The paper method can not be applied to cream, for an even sample can not be obtained by capillarity.
5. With samples of milk that have become slightly acid the extract from the paper is much increased.

H. SNYDER,
Assistant Chemist.

We have collected these experiments on the use of asbestos as an absorbent from these different sources for the purpose of bringing this substance more generally into notice, for we believe it is destined to supersede the use of paper.

In the use of all these absorbents, it is important that the ether used be perfectly dry. In the following table is shown the difference in the amount of fat obtained from the use of ether with a specific gravity of 0.748, and then with the same ether redistilled after standing over night in calcic chloride (sp. gr. 0.738), also with the use of Squibb's stronger ether.

Fat extracted from coil with sulph. ether with a specific gravity of .748.	Fat extracted from coil with same ether after being redistilled, and whose specific gravity was .738.	Fat extracted from coil with Squibb's str'ng'r sulph. ether.	Fat extracted from dish with redistilled sulph. ether.	Total solids.	Water.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
4.20	4.07	3.98	3.62	12.70	87.30
Lost.	....	4.67	4.33	13.46	86.54
Lost.	5.11–5.10	5.06	4.63	13.89	86.11

The following seven analyses were made for the purpose of comparing the results obtained by sulphuric ether and petrolic ether. It will be observed that the results obtained with the petrolic ether are practically the same as with the sulphuric ether, and this accords with the experience of other chemists.

We have used different petroleum ethers and find that but few of them can be used in an ordinary Soxhlet's apparatus. They being compounds of various ethers having different boiling points, the portion that first comes over will boil in the tube before the less volatile portion will boil at all in the flask, thus preventing the syphon tube from filling.

Number.	DATE.	Fat from dish.	Fat from coil, sulphate ether.	Fat from coil, petrolic ether.
		Per cent.	Per cent.	Per cent.
1...	July 25	3.51	4.01	4.11
2...	July 25	5.02	5.44	5.48
3...	November 11..............	3.63	4.13	4.28–4.32
4...	....	4.33	4.67	4.56
5...	....	3.62	3.89	3.14
6...	....	4.33	4.67	4.56
7...	....	4.63	5.06	3.42

The following table gives the comparison of results obtained by Dr. Theodore Deecke, of the New York State Hospital at Utica, N. Y., by his own method and the Adams'. Dr. Deecke's method consists in adding to the milk, placed in an ordinary dish, one-tenth of its weight of pure precipitate carbonate of lime, evaporating and extracting with benzine.

NUMBER.	Water.	Solids.	Fat by Deecke's method.	Fat by Adams' method.	Difference.	Ash.
1...........	86.96	13.04	4.22	4.24	.02	.69
2...........	86.49	13.51	4.56	4.57	.01	.70
3.	87.43	12.57	3.94	3.97	.03	.70
4...........	86.50	13.50	4.10	4.40	.30	.70
5..........	86.82	13.18	4.01	4.04	.03	.70
6...........	86.20	13.80	5.00	5.00	.00	.70
7...........	87.30	12.70	4.13	4.15	.02	.68
8...........	87.30	12.70	4.12	4.15	.03	.68
9...........	84.98	15.02	6.46	6.50	.04	.71

These results are the closest obtained by any other two methods known to me. It is worthy of further attention.

CHEESE.

The following eighty-nine samples of "full cream" cheese were mostly made by, or under the direct supervision of, the cheese instructors of this Department; and their composition, so far as that number can, presents reliable data upon which to base a standard for "full-cream cheese:"

The most of these samples of cheese were made in Herkimer, Oneida, Lewis, Jefferson, St. Lawrence, Oswego, Wayne, Livingston, Wyoming, Cattaraugus, Chautauqua, Allegany and Madison counties.

The skim cheese were made in Chenango and Oneida counties.

NUMBER.	Water.	Solids.	Per cent of fat in total solids.	Sugar, caseine, etc.	Fat.	Ash.	Kind of cheese.	When made.	When taken.
1	30.30	69.70	52.99	28.88	36.94	3.88	Full cream	October 10, 1889	May 7, 1890
2	34.89	65.11	38.28	36.34	24.93	3 84	Full cream	May 5, 1890	June 14, 1890
3	33.15	66.85	43.67	35.06	29.20	2 59	Full cream	May 2, 1890	June 14, 1890
4	38.16	61.84	43.30	31.57	26.78	3.49	Full cream	May 11, 1890	June 14, 1890
5	31.70	68.30	50.26	29.89	34.33	4.08	Full cream	May 28, 1890	June 17, 1890
6	31.97	68.03	43 51	34.45	29.60	3.98	Full cream	May 28, 1890	June 17, 1890
7	33.14	66.86	48.96	30.44	32.74	3.68	Full cream	May 28, 1890	June 17, 1890
8	32 08	67.92	46.58	32.56	31.64	3.72	Full cream	May 28, 1890	June 17, 1890
9	34.93	65 07	43.41	33.42	28.25	3.40	Full cream	June 7, 1890	July 2, 1890
10	34.25	65.75	45.27	32.75	29.77	3 23	Full cream	June 11, 1890	July 2, 1890
11	31.20	68.80	39.04	38.06	26.86	3.88	Full cream	June 10, 1890	July 2, 1890
12	33.93	66.07	47.10	31.06	31.12	3.89	Full cream	June 7, 1890	July 2, 1890
13	34.00	66.00	44.68	32.90	29.49	3.61	Full cream	June 12, 1890	July 2, 1890
14	33.84	66.16	44.81	32.76	29.65	3.75	Full cream	June 11, 1890	July 2, 1890
15	30.07	69.93	45.37	34.77	31.73	3.43	Full cream	June 10. 1890	July 2, 1890
16	28.73	71.27	49.92	32.12	35.58	3.57	Full cream	June 9, 1890	July 2, 1890
17	28.75	71 25	49.43	31.81	35.22	4.22	Full cream	June 10, 1890	July 2, 1890
18	34.17	65.83	50.67	28.73	33 36	3.74	Full cream	June 13, 1890	July 2, 1890
19	31.65	68.35	41.75	36.14	28.54	3.67	Full cream	June 9, 1890	July 2, 1890
20	30.32	69.68	44.40	35.07	30.94	3.67	Full cream	June 10, 1890	July 2, 1890
21	32.62	67.38	46.88	32.15	31.59	3.64	Full cream	June 17, 1890	July 5, 1890
22	32.75	67.25	44.29	34.09	29.79	3.37	Full cream	June 18, 1890	July 7, 1890
23	37.27	62.73	45.16	31.58	28 33	2.82	Full cream	June 24, 1890	July 9, 1890
24	34.67	65.33	47.94	30.82	31.32	3.19	Full cream	June 25, 1890	July 10, 1890
25	28.99	71.01	42.85	37.07	30.43	3.51	Full cream	June 19, 1890	July 10, 1890
26	26.64	73.36	46 07	35 89	33.80	3.67	Full cream	June 26, 1890	July 8, 1890
27	35.91	64.09	35.76	38.28	22.92	2.89	Export	June 27, 1890	July 12, 1890
28	35.82	64.18	34.54	39.06	22.17	2.95	Home trade	June 25, 1890	July 14, 1890
29	35.94	64.06	36.68	37.13	23.50	3.43	Home trade	June 29, 1890	July 14, 1890
30	31.86	68.14	48.06	32.00	32.75	3.39	Full cream	July 1, 1890	July 18. 1890
31	28.39	71.61	44.47	36.40	31.85	3.36	Full cream	July 3, 1890	July 18, 1890
32	36.63	63.37	40.96	34.27	25.96	3.14	Full cream	July 12, 1890	July 18, 1890
33	34.75	65.25	48.00	30.51	31.32	3.42	Full cream	July 10, 1890	July 18, 1890
34	34.02	65.98	41.48	35.00	27.37	3.61	Full cream	July 2. 1890	July 18, 1890
35	35.18	64.82	30.20	41.47	19.58	3.77	Full cream	July 10, 1890	July 18, 1890
36	32.16	67.84	33.26	41.20	22.57	4.07	Full cream	July 10, 1890	July 18, 1890
37	33.76	66.24	43.59	34 95	28.88	2.41	Full cream	July 8. 1890	July 18. 1890
38	34.56	65.44	44.28	32.78	28.98	3.68	Full cream	July 24, 1890	August 8. 1890
39	34.07	65.93	38.70	36.85	25.52	3.56	Full cream	July 25, 1890	August 8, 1890
40	34.71	65.29	39.76	35.40	25.96	3.93	Full cream	July 31, 1890	August 8, 1890
41	34.14	65.86	42.63	34.92	28.08	2.86	Full cream	August 1, 1890	August 8, 1890
42	35 84	64.16	40.46	34.10	25.96	4.10	Full cream	July 28, 1890	August 9, 1890
43	35.31	64.69	46.97	30.43	30.39	3.87	Full cream	July 29, 1890	August 11, 1890

44	35.76	64.24	45.40	31.51	29.17	3.56	Full cream	July 30, 1890	August 11, 1890
45	33.22	66.78	37.84	38.16	25.27	3.35	Full cream	July 19, 1890	August 12, 1890
46	34.89	65.11	42.85	33.75	27.90	3.46	Full cream	July 22, 1890	August 13, 1890
47	33.93	66.07	46.11	31.75	30.47	3.85	Dairy	July 17, 1890	August 14, 1890
48	34.08	65.92	37.07	38.04	24.44	3.44	Dairy	July 18, 1890	August 10, 1890
49	33.36	66.64	37.87	37.96	25.24	3.44	Dairy	July 17, 1890	August 14, 1890
50	33.46	66.54	46.52	32.13	30.96	3 45	Full cream	August 5, 1890	August 18, 1890
51	33.81	66.19	39.74	36.05	26.31	3.83	Export	August 11, 1890	August 25, 1890
52	35.43	64.57	39.86	35.25	25.74	3.58	Export	August 12, 1890	August 25, 1890
53	36.95	63.05	35.17	37.31	22.18	3.56	Export	August 8, 1890	August 25, 1890
54	33.80	66.20	44.42	33.36	29.41	3.43	Full cream	August 12, 1890	August 26, 1890
55	33.88	66.12	41.06	34.98	27.15	3.99	Full cream	August 15, 1890	August 26, 1890
56	33 39	66.61	44.93	33.23	29.93	3.45	Full cream	August 8, 1890	August 26, 1890
57	34.51	65.49	44.69	32.59	29.27	3.63	Full cream	August 7, 1890	August 27, 1890
58	33.80	66 20	34.51	39.46	22.85	3.89	Full cream	August 12, 1890	August 27, 1890
59	34.21	65.79	38.16	36.95	25.11	3.73	Home trade or export	August 12, 1890	August 29, 1890
60	33.12	66.88	41.43	35.29	27.71	3.88	Export	August 1, 1890	August 29, 1890
61	36.57	63.43	40.23	34.54	25.52	3.37	Export	August 20, 1890	August 28, 1890
62	34.73	65.27	45.54	31.90	29.73	3.64	Full cream	August 22, 1890	September 3, 1890
63	36.03	63.97	40.97	34.34	26 21	3.42	Export	August 28, 1890	September 9, 1890
64	34.73	65.27	45.22	32.46	29.52	3.29	Export	August 13, 1890	September 9, 1890
65	36.81	63.19	35.32	37.64	22.32	3 23	Shipping cheddar	August 18, 1890	September 3, 1890
66	36.03	63.97	39.81	35.00	25.47	3 50	Full cream	August 18, 1890	September 15, 1890
67	36.28	63.72	44.64	31.77	28.45	3.50	Full cream	September 1, 1890	September 15, 1890
68	36.07	63.93	42.29	33.67	27.04	3.22	Export	August 27, 1890	September 19, 1890
69	32.93	67.07	44.07	33.95	29.56	3.56	Export	August 12, 1890	September 19, 1890
70	34.52	65.48	40.11	35.76	26.27	3.45	Full cream	September 5, 1890	September 24, 1890
71	34.60	65.40	45.97	31.76	30.07	3.57	Full cream	August 14, 1890	September 24, 1890
72	35.66	64.34	44.88	32.19	28 88	3.27	Full cream	August 15, 1890	September 24, 1890
73	32.90	67.10	40.50	36.29	27.18	3.63	Full cream	July 10, 1890	September 30, 1890
74	35.12	64.88	42.78	33.37	27.76	3.75	Full cream	September 9, 1890	September 30, 1890
75	34.77	65.23	40.01	35.55	26.10	3.58	Full cream	September 11, 1890	October 1, 1890
76	34.93	65.07	36.66	37.79	23.86	3.42	Full cream	September 18, 1890	October 3, 1890
77	34.85	65.15	50.09	28.71	32.64	3.80	Full cream	September 10, 1890	October 30, 1890
78	36.98	63.02	38.86	35.16	24.49	3.37	Full cream export colored	September 14, 1890	October 2, 1890
79	35.35	64 65	40.32	35.29	26.07	3.29	Full cream home trade	September 1, 1890	October 3, 1890
80	33.58	66.42	36.38	38.41	24.17	3.84	Full cream home trade	September 3, 1890	October 4, 1890
81	35.64	64.36	37.49	36.94	24.13	3.29	Full cream export colored	September 2, 1890	October 4, 1890
82	34.34	65.66	35.47	38.67	23.29	3.70	Full cream export colored	September 27, 1890	October 15, 1890
83	33.78	66.22	37.57	37.33	24.88	4.01	Full cream export colored	September 26, 1890	October 15, 1890
84	35.52	64.48	41.56	33.90	26.80	2.78	Full cream export white	September 25, 1890	October 15, 1890
85	37.62	62.38	39.61	34.49	24.71	3.18	Full cream home trade white	September 26, 1890	October 15, 1890
86	37.93	62.07	35.33	37.18	21.93	2.96	Full cream export colored	September 28, 1890	October 21, 1890
87	35.35	64.65	31.44	40.17	20.33	4.15	Full cream export colored	September 27, 1890	October 21, 1890
88	37.63	62.37	35.41	36.68	22.09	3.60	Full cream export white	September 30, 1890	October 21, 1890
89	35.54	64.46	35.68	38.10	23.01	3.35	Full cream	September 26, 1890	October 22, 1890
Average	31.97	63.75	42.00	34.62	27.72	3.54			

NUMBER.	Process of making.	Made by	Sent to chemist by	Where made and remarks.
1	Cheddar	W. W. H. & G. A. S.	G. A. S.	At Cuba Valley Factory, during cheese conference.
2	Cheddar	J. B	G. A. S.	Avon Factory.
3	Cheddar	G. A. S.	G. A. S.	Wadsworth Factory.
4	Cheddar	J. B.	G. A. S.	Wadsworth Factory, after conference.
5	Cheddar	G. A. S.	G. M.	G. Merry's Factory, Verona, N. Y., temperature, 98° Fahr.
6	Cheddar	M. T. M.	G. M.	G. Merry's Factory. Verona, N. Y., temperature, 98° Fahr.
7	Cheddar	G. M.	G. M.	G. Merry's Factory, Verona, N. Y., temperature, 98° Fahr.
8	Cheddar	G. M.	G. M.	G. Merry's Factory, Verona, N. Y., temperature, 94° Fahr.
9	Cheddar	A. C. M.	M. A. P.	Caneadea Factory.
10	Cheddar	F. Y. B.	M. A. P.	Belmont Factory.
11	Cheddar	G. B.	M. A. P.	Scio Factory.
12	Cheddar	W. W. H.	M. A. P.	Caneadea Factory.
13	Cheddar	G. A. S	M. A. P.	Angelica Union Factory.
14	Cheddar	W. W. H	M. A. P.	Belmont Factory.
15	Cheddar	J. R. L.	M. A. P.	Allen Factory.
16	Cheddar	M. H. C.	M. A. P.	Keystone Factory, Aristotle.
17	Cheddar	W. W. H.	M. A. P.	Scio Factory.
18	Cheddar	W. L. H.	M. A. P.	Angelica Union Factory.
19	Cheddar	G. A. S.	M. A. P.	Keystone Cheese Factory.
20	Cheddar	G. A. S.	M. A. P.	Allen Cheese Factory.
21	Cheddar	M. T. M.	J. H. B.	Doueser Factory, near Booneville.
22	Cheddar	G. A. S.	J. G.	Millbrook Factory.
23	Cheddar	G. A. S.	J. G.	North Victory Factory.
24	Cheddar	G. A. S.	J. G.	Red Creek Factory.
25	Cheddar	G. A. S.	J. G.	The Hannibal Factory.
26	Cheddar	G. A. S.	J. G.	The North Road Factory, Scriba, N. Y.
27	Cheddar	D.	M. T. M	The Cedarville Factory.
28	Cheddar	A. A. D.	M. T. M	
29	Cheddar	T. D.	M. T. M.	
30	Cheddar	G. A. S.	J. H. B.	Van Aernam Factory.
31	Cheddar	G. A. S.	J. H. B.	Sulphur Springs Factory, Lowville.
32	Cheddar	H. A. R.	J. H. B.	Lowville.
33	Cheddar	G. A. S.	J. H. B.	Vat No. 1, Cook Factory, Denmark.
34	Cheddar	G. A. S.	J. H. B.	Riverdale Factory, Glendale.
35	Cheddar	G. A. S.	J. H. B.	Vat No. 3, Cook Factory, Denmark.
36	Cheddar	G. A. S.	J. H. B.	Vat No. 2. Cook Factory, Denmark.
37	Cheddar	G. A. S.	J. H. B.	Lowville Factory.
38	Cheddar	G. A. S.	J. H. B.	Point Rock Factory.
39	Cheddar	G. A. S.	J. H. B.	Gregin's Factory, Glenmore.
40	Cheddar	G. A. S.	J. H. B.	Shein Bros ' Factory.
41	Cheddar	G. A. S.	J. H. B.	Rock Spring Factory, West Leyden.
42	Cheddar	M. T. M.	C. S. K.	Tremaine's Factory, Rodman, Jefferson County, N. Y.
43	Cheddar	G. A. S.	G. A. S.	Sauquoit Factory.

44		Cheddar	G. A. S.	G. A. S.	Sauquoit Factory.
45		Stirred curd	W. W. H.	P. J. S.	
46		Stirred curd	G. A. S.	P. J. S.	Excelsior Factory No. 1, near Attica.
47		Stirred curd	W. W. H.	P. J. S.	Pikes Village Factory, Wyoming County.
48		Stirred curd	W. W. H.	P. J. S.	Alexander Village Factory, Livingston County.
49		Stirred curd	G. A. S.	P. J. S.	Campbell Hill Factory, Wyoming County.
50		Cheddar	G. A. S.	G. A. S.	J. C. Morgan Factory, Frankfort.
51		Cheddar	H. D.	M. T. M.	Litchfield Factory.
52		Cheddar	C. H.	M. T. M.	Wheelock No. 2, Cedar Lake.
53		Cheddar	D. H.	M. T. M.	Wheelock No. 4, Cold Spring.
54		Cheddar	G. A. S.	G. A. S.	Kast Bridge Factory.
55		Cheddar	G. A. S.	G. A. S.	Herkimer Factory.
56		Cheddar	W. W. H.	W. W. H.	Depuyster Corners Factory, St. Lawrence County.
57		Cheddar	W. W. H.	W. W. H.	Cowpath Factory, DeKalb, St. Lawrence County.
58		Cheddar	W. W. H.	W. W. H.	Empire Factory, Lisbon, St. Lawrence County.
59		Cheddar		M. T. M.	Morgan combination, made under supervision of Morgan.
60		Cheddar	A. A.	M. T. M.	Morgan combination, made under supervision of Morgan.
61		Cheddar	E. H. B. & S. & H.	J. G.	Ira Factory.
62		Cheddar	G. A. S.	G. A. S.	Oneida River Factory.
63		Cheddar	W. S.	M. T. M.	Augusta Centre Factory.
64		Cheddar	G. A. S.	M. T. M.	Augusta Centre Factory.
65		Cheddar	C. W.	W. G. S.	Remsen Factory.
66		Cheddar	W. W. H.	W. W. H.	Gouverneur, St. Lawrence County.
67		Cheddar	W. W. H.	W. W. H.	DeKalb, St. Lawrence County.
68		Cheddar	G. D.	M. T. M.	Cedarville Factory No. 1.
69		Cheddar	S. C. W.	M. T. M.	Wheelock No. 1, North.
70		Cheddar	G. A. S.	G. A. S.	Barttlett Factory.
71		Cheddar	W. W. H.	W. W. H.	Collin's Landing Factory, Jefferson County.
72		Cheddar	W. W. H.	W. W. H.	Peel Dock Factory, Jefferson County.
73		Cheddar	W. W. H.	W. W. H.	Highland Factory, Canton, St. Lawrence County.
74		Cheddar	W. W. H.	W. W. H.	Heuvelton Factory, Oswegatchie, St. Lawrence County.
75		Cheddar	W. W. H.	W. W. H.	Calabogia Factory, Hammond, St. Lawrence County.
76		Cheddar	G. A. S.	J. H. B.	N. Trenton Factory,
77		Cheddar	G. A. S.	J. H. B.	Big Brook, Southwestern Factory.
78		Cheddar	A. E. D.	M. T. M.	Cedarville combination.
79		Cheddar	T. D.	M. T. M.	Egglester No. 10.
80		Cheddar	W. & E.	M. T. M.	Wood's Corners.
81		Cheddar	C. T. W.	M. T. M.	Wheelock No. 1.
82		Cheddar	A. C. T.	W. J. C.	Findley's lake, Chautauqua County.
83		Cheddar	M. T. M.	W. J. C.	Morgan's creamery.
84		Cheddar	M. T. M.	W. J. C.	Morgan's Corners.
85		Cheddar	J. P.	W. J. C.	Laona.
86		Cheddar	G. L.	W. J. C.	Laona.
87		Cheddar	M. T. M.	W. J. C.	Clear Spring.
88		Cheddar	M. T. M.	W. J. C.	Arkwright Valley.
89		Cheddar	G. A. S.	G. A. S.	Oyer Factory.

The following thirteen samples of what is known as "night-skim" cheese shows the composition of such cheese, and also the fallacy of the notion which prevails that the cream can be taken off of the night's milk which, when mixed with the whole morning's milk will make a cheese, in the fall, as rich in fat as the whole night's and morning's milk will make in the summer. It will be seen that the average of fat in the thirteen samples is much lower than the average of the full cream. While those containing the greatest amount of fat approach closely to those of the full cream containing the least fat (one containing just as much), the majority of them contain very much less.

The "two pounds," "one and one-half pounds night skim," etc., in the table, mean that sufficient cream has been removed from 100 pounds of milk to make "two pounds," "one and one-half pounds," etc., of butter.

NIGHT-SKIM CHEESE.

NUMBER.	Water.	Solids.	Per cent of fat in totals solids.	Sugar, caseine, etc.	Fat.	Ash.	Kind of cheese.	When made.	When taken.
1	40.25	59.75	23.73	41.91	14.18	3.66	Two pounds night skim	September 8, 1890	October 1, 1890
2	38.00	62.00	33.33	38.31	20.67	3.02	One and one-half pounds night skim	September 1, 1890	October 1, 1890
3	43.76	56.24	20.02	41.05	11.26	3.93	Two pounds night skim	September 17, 1890	October 1, 1890
4	40.56	59.44	21.63	43.38	12.86	3.20	Two pounds night skim	September 20, 1890	October 1, 1890
5	42.91	57.09	12.76	46.00	7.29	3.80	Two and one-half pounds night skim	September 14, 1890	October 2, 1890
6	45.24	54.76	20.43	40.32	11.19	3.25	Two and one-quarter pounds night skim	September 20, 1890	October 2, 1890
7	39.87	60.13	22.61	43.51	13.60	3.02	Two and one-half pounds night skim	September 8, 1890	October 2, 1890
8	43.84	56.16	16.43	43.18	9.23	3.75	Three pounds night skim	September 11, 1890	October 2, 1890
9	39.84	60.16	21.25	44.03	12.79	3.34	Two and one-half pounds night skim	September 12, 1890	October 2, 1890
10	41.08	58.92	35.64	34.84	21.00	3.08	Night skim	September 4, 1890	October 3, 1890
11	39.40	60.60	40.46	33.34	24.52	2.74	Night skim	September 12, 1890	October 4, 1890
12	41.26	58.74	32.97	35.91	19.37	3.46	Night skim	August 26, 1890	September 30, 1890
13	39.06	60.94	36.44	35.64	22.21	3.09	Night skim	September 5, 1890	September 30, 1890
Average	41.15	58.84	25.97	40.10	15.39	3.33			

NIGHT-SKIM CHEESE — (*Concluded*).

NUMBER.	Process.	Made by	Sent to chemist by	Where made.
1	Cheddar	E. E. T.	G. A. S.	Millbrook Factory.
2	Stirred curd	O. E. B	G. A. S.	Town of McDonough.
3	Stirred curd	G. C. S	G. A. S.	Tyne Factory, Smithville.
4	Cheddar	G. T.	G. A. S.	Smithville Factory.
5	Stirred curd	C. D. P.	G. A. S.	Oxford, Chenango County.
6	Stirred curd	E. B	G. A. S.	Oxford, Chenango County.
7	Cheddar	H. J. S	G. A. S.	Oxford Union Factory.
8	Stirred curd	A. P. S	G. A. S.	Oxford Hull Factory.
9	Stirred curd	W. B. G.	G. A. S.	Oxford Union Factory.
10	Cheddar	G. W.	J. H. B.	Trenton.
11	Cheddar	A. S. B	J. H. B.	Home Factory.
12	Cheddar	G. C.	J. H. B.	Crill Factory, Floyd.
13	Cheddar	J. C. B.	J. H. B.	Bugg patent, Holland Patent.

In the third Annual Report of the New York State Dairy Commission for the year 1886, page 73, we gave the average percentage of the different ingredients of seventy-nine samples of American alleged full-cream cheese; fifty-seven of which were from cheese branded with the State brand. Their average composition was water, 25.93 per cent; fat, 31.55 per cent; curd, 38.12 per cent; ash, 4.38 per cent; and there was a wide range of variation in each constituent, more especially the water. The present table of eighty-nine samples gives as the average composition, water, 31.97 per cent; solids, 63.75 per cent; curd, 34.62 per cent; fat, 27.72 per cent; ash, 3.54 per cent. It will be observed that the average of water is higher, and the total solids and fat lower than in the above mentioned fifty-seven samples. However, there is a much greater uniformity in the amounts of each ingredient, and, as most of these samples were made by or under the direct supervision of our own cheese instructors, they present a much more reliable basis for determining a standard of full-cream cheese.

As we stated in the former report, the water is the unstable ingredient, as it evaporates more or less according to circumstances; and, if a sample of cheese is not analyzed immediately upon receiving it, but is allowed to stand open in the laboratory some time, there will be found to be much less water and more total solids. However, in these cases the samples were analyzed immediately upon, or very soon after, receiving them, and they were never unsealed till about to be analyzed.

Still, the difficulty arising from the liability of evaporation of the water may be removed in the calculation of fat, by determining the proportion of fat to the total solids, or, as it is technically called, calculating on a dry basis.

Calculating on this basis, the average proportion of fat to the total solids of these eighty-nine samples is 42.00 per cent.

Respectfully submitted.

R. D. CLARK, M. D.,
Department Chemist.

LAWS

RELATING TO

DAIRY PRODUCTS.

LAWS RELATING TO DAIRY PRODUCTS.

Chapter 202.

An Act to prevent deception in sales of dairy products.

Passed April 24, 1884; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

(*Amended by section* 1 *of chapter* 577 *of Laws of* 1886, *and chapter* 223 *of Laws of* 1887.)

Section 1. No person or persons shall sell or exchange, or expose for sale or exchange, any unclean, impure, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same or of cream from the same. This provision shall not apply to pure skim cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section is guilty of a misdemeanor and shall be punished by a fine of not less than twenty-five nor more than two hundred dollars, or by imprisonment of not less than one or more than six months, or by both such fines and imprisonment for the first offense, and by six months imprisonment for each subsequent offense.

(*Section* 2 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 2. No person shall keep cows for the production of milk for market, or for sale or exchange, or for manufacturing the same, or cream from the same, into articles of food, in a crowded or unhealthy condition, or feed the cows on food that is unhealthy or that produces impure, unhealthy, diseased or unwholesome milk. No person shall manufacture from impure, unhealthy, diseased, or unwholesome milk, or of cream from the same, any article of food. Whoever violates the provisions of this section is guilty of a misdemeanor and shall be punished by a fine of not less than twenty-five nor more than two hundred dollars, or by imprisonment of not less than one or more than four months, or by both such fine and imprisonment for the first offense, and by four months imprisonment for each subsequent offense.

(*Section* 3 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 3. No person or persons shall sell, supply, or bring to be manufactured to any butter or cheese manufactory, any milk diluted with water, or any unclean, impure, unhealthy, adulterated, or unwholesome milk, or milk from which any cream has been taken (except pure skim milk to skim cheese factories), or shall keep back any part of the milk commonly know as "strippings," or shall bring or supply milk to any butter or cheese manufactory that is sour (except pure skim milk to skim cheese factories). No butter or cheese manufactories, except those who buy all the milk they use, shall use for their own benefit, or allow any of their employés or any other person to use, for their own benefit, any milk, or cream from the milk, or the product thereof brought to said manufactories, without the consent of the owners thereof. Every butter or cheese manufacturer, except those who buy all the milk they use, shall keep a correct account of all the milk daily received, and of the number of pounds and packages of butter, the number and aggregate weight of cheese made each day, the number of packages of cheese and butter disposed of, which shall be open to inspection to any person who delivers milk to such manufacturer. Whoever violates the provisions of this section shall be guilty of a misdemeanor and shall be punished for each offense by a fine of not less than twenty-five or more than two hundred dollars, or not less than one or more than six months imprisonment, or both such fine and imprisonment.

(*Section* 4 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 4. No manufacturer of vessels for the package of butter shall sell or dispose of any such vessels without branding his name and the true weight of the vessel or vessels on the same with legible letters or figures not less than one-fourth of an inch in length. Whoever violates the provisions of this section is guilty of a misdemeanor and shall be punished for each offense by a fine of not less than fifty nor more than one hundred dollars, or by imprisonment of not less than thirty or more than sixty days, or by both such fine and imprisonment.

(*Section* 5 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 5. No person shall sell or offer or expose for sale any milk except in the county from which the same is produced, unless each can, vessel or package containing such milk shall be distinctly and durably branded with letters not less than one inch in length, on the outside, above the center, on every can, vessel or package containing such milk, the name of the county from which the same is produced, and the same mark shall be branded or painted in a conspicuous place on the carriage or vehicle in which the milk is drawn to be sold, and such milk can only be sold in or retailed out of a can, vessel, package or carriage so marked. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five nor more than two hundred dollars, or not less than two months' or more than four months' imprisonment, or both such fine and imprisonment for the first offense, and by four months' imprisonment for each subsequent offense.

(*Section* 6 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 6. No person shall manufacture out of any oleaginous substance or substances, or any compound of the same, other than that produced from unadulterated milk, or cream from the same, any article designed to take the place of butter or cheese produced from pure, unadulterated milk or cream of the same; or shall sell, or offer for sale the same as an article of food. This provision shall not apply to pure skim milk cheese made from pure skim milk. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred nor more than five hundred dollars, or not less than six months' or more than one year's imprisonment, or by both such fine and imprisonment, for the first offense, and by imprisonment for one year for each subsequent offense.

(*Section* 10 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 7. No person shall offer, sell or expose for sale in full packages, butter or cheese branded or labeled with a false brand or label as to county or State in which the article is made. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five or more than fifty dollars, or imprisonment of not less than fifteen or more than thirty days, for the first offense, and fifty dollars or thirty days' imprisonment for each subsequent offense.

(*Section* 11 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 8. No person shall manufacture, sell, or offer for sale, any condensed milk unless the same shall be put up in packages, upon which shall be distinctly labeled or stamped the name or brand by whom or under which the same is made. No condensed milk shall be made or offered for sale unless the same is manufactured from pure, clean, healthy, fresh, unadulterated and wholesome milk, from which the cream has not been removed; or unless the proportion of milk solids contained in the condensed milk shall be in amount the equivalent of twelve per centum of milk solids in crude milk, and of such solids twenty-five per centum shall be fat. When condensed milk shall be sold from cans or packages not hermetically sealed, the vendor shall brand or label such cans or packages with the name of the county or counties from which the same was produced, and the name of the vendor. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than fifty or more than five hundred dollars, or by imprisonment of not more than six months, or both such fine and imprisonment for the first offense, and by six months imprisonment for each subsequent offense.

(*Section* 12 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 9. The Governor, by and with the advice and consent of the Senate, shall appoint a commissioner, who shall be known as the New York State Dairy Commissioner, who shall be a citizen of this State, and who shall hold his office for the term of two years, or until his successor is appointed, and shall receive a salary of three thousand dollars per annum and his necessary expenses incurred in the discharge of his official duties under this act; said commissioner shall be appointed within ten days after the passage of this act, and shall be charged, under the direction of the Governor, with the enforcement of the various provisions thereof. Said commissioner may be removed from office at the pleasure of the Governor, and his successor appointed as above provided for.

The said commissioner is hereby authorized and empowered to appoint such assistant commissioners and to employ such experts, chemists, agents and such counsel as may be deemed by him necessary for the proper enforcement of this law. The compensation to be fixed by the commissioner.

The said commissioner is also authorized to employ a clerk at an annual salary not to exceed twelve hundred dollars.

The sum of thirty thousand dollars is hereby appropriated to be paid for such purpose out of any moneys in the treasury not otherwise appropriated. All charges, accounts and expenses authorized by this act shall be paid by the Treasurer of the State, upon the warrant of the Comptroller. The entire expense of said commissioner shall not exceed the sum appropriated for the purposes of this act.

The said commissioner shall make annual reports to the Legislature, not later than the fifteenth day of January of each year, of his work and proceedings, and shall report in detail the number of assistant commissioners, experts, chemists, agents and counsel he has employed, with their expenses and disbursements. The said commissioner shall have a room in the New Capitol, to be set apart for his use by the Capitol Commissioner.

(*Section* 12 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 10. The said commissioner and assistant commissioners, and such experts, chemists, agents and counsel as they shall duly authorize for the purpose, shall have full access, egress and ingress to all places of business, factories, farms, buildings, carriages, cars, vessels and cans used in the manufacture and sale of any dairy products or any imitation thereof. They shall also have power and authority to open any package, can or vessel containing such articles which may be manufactured, sold or exposed for sale in violation of the provisions of this act, and may inspect the contents therein and may take therefrom samples for analyses.

(*Section* 14 *of chapter* 183 *of Laws of* 1885, *substituted practically.*)

§ 11. Courts of Special Sessions shall have jurisdiction of all cases arising under this act, and their jurisdiction is hereby extended so as to enable them to enforce the penalties imposed by any or all of the sections hereof.

(*Section* 15 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 12. In all prosecutions under this act the costs thereof shall be paid out of the fine, if one is collected; if not, the same shall be paid in the manner now provided for by law, and the rest of the fine shall be paid to the State Treasurer.

(*Section* 16 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 13. In all prosecutions under this act, relating to the sale and manufacture of unclean, impure, unhealthy, adulterated or unwholesome milk, if the milk be shown to contain more than eighty-eight per centum of water or fluids or less than twelve per centum of milk solids which shall contain not less than three per centum of fat, it shall be declared adulterated, and milk drawn from cows within fifteen days before and five days after parturition, or from animals fed on distillery waste, or any substance in the state of putrefaction, or fermentation, or upon any unhealthy food whatever, shall be declared unclean, impure, unhealthy and unwholesome milk. This section shall not prevent the feeding of ensilage from silos.

(*Section* 17 *of chapter* 183 *of Laws of* 1885, *practically substituted.*)

§ 14. The doing of anything prohibited being done, and the not doing of anything directed to be done in this act shall be presumptive evidence of a willful intent to violate the different sections and provisions hereof.

§ 15. Chapters four hundred and sixty-seven of the Laws of eighteen hundred and sixty-two, five hundred and forty-four and five hundred and eighteen of the Laws of eighteen hundred and sixty-four, five hundred and fifty-nine of the Laws of eighteen hundred and sixty-five, four hundred and fifteen of the Laws of eighteen hundred and seventy-seven, two hundred and twenty and two hundred and thirty-seven of the Laws of eighteen hundred and seventy-eight, four hundred and thirty-nine of the Laws of eighteen hundred and eighty, and two hundred and fourteen of the Laws of eighteen hundred and eighty-two, are hereby repealed.

§ 16. This act shall take effect on the first day of June, eighteen hundred and eighty-four, except as otherwise provided therein.

Chapter 183.

An Act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products."

Passed April 30, 1885; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

(*Amended by chapter* 223 *of Laws of* 1887.)

Section 1. No person or persons shall sell or exchange, or expose for sale or exchange, any unclean, impure, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same, or of cream from the same. The provisions of this section shall not apply to skim milk sold to bakers or to housewives for their own use or manufacture, upon written orders for the same, nor to skim milk sold for use in the county in which it is produced. This provision shall not apply to pure skim cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars, or by imprisonment of not less than one month or more than six months, or both such fine and imprisonment for the first offense, and by six months' imprisonment for each subsequent offense.

§ 2. No person shall keep cows for the production of milk for market, or for sale or exchange, or for manufacturing the same, or cream from the same, into articles of food, in a crowded or unhealthy condition, or feed the cows on food that is unhealthy, or that produces impure, unhealthy, diseased or unwholesome milk. No person shall manufacture from impure, unhealthy, diseased or unwholesome milk, or of cream from the same, any article of food. Whoever violates the provision of this section is guilty of a misdemeanor and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars, or by imprisonment of not less than one month or more than four months, or by both such fine and imprisonment for the first offense, and by four months' imprisonment for each subsequent offense.

§ 3. No person or persons shall sell, supply or bring to be manufactured to any butter or cheese manufactory, any milk diluted with water or any unclean, impure, unhealthy, adulterated or unwholesome milk, or milk from which any cream has been taken (except pure skim milk to skim cheese factories), or shall keep back any part of the milk commonly known as "strippings" or shall bring or supply milk to any butter or cheese manufactory that is sour (except pure skim milk to skim cheese factories). No butter or cheese manufactories, except those who buy all the milk they use, shall use for their own benefit, or allow any of their employes or any other person to use for their own benefit, any milk, or cream from the milk, or the product thereof, brought to said manufactories without the consent of the owners thereof. Every butter or cheese manufacturer, except those who buy all the milk they use, shall keep a correct account of all the milk daily received, and of the number of packages of butter and cheese made each day, and the number of packages and aggregate weight of cheese and butter disposed of each day, which account shall be open to inspection to any person who delivers milk to such manufacturer. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than twenty-five dollars or more than two hundred dollars, or not less than one month or more than six months' imprisonment, or both such fine and imprisonment.

§ 4. No manufacturer of vessels for the package of butter shall sell or dispose of any such vessels without branding his name and the true weight of the vessel or vessels on the same, with legible letters or figures not less than one-fourth of an inch in length. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than fifty dollars nor more than one hundred dollars, or by imprisonment of not less than thirty days or more than sixty days, or by both such fine and imprisonment.

§ 5. No person shall sell, or offer or expose for sale, any milk except in the county from which the same is produced, unless each can, vessel or package containing such milk shall be distinctly and durably branded with letters not less than one inch in length, on the outside above the center, on every can, vessel or package containing such milk, the name of the county from which the same is produced; and the same marks shall be branded or painted in a conspicuous place on the carriage or vehicle in which the milk is drawn to be sold; and such milk can only be sold in, or retailed out of a can, vessel, package or carriage so marked. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars, or not less than two months or more than four months' imprisonment, or both such fine and imprisonment, for the first offense, and by four months' imprisonment for each subsequent offense.

INVALID — (PEOPLE *v.* MARX).

§ 6. No person shall manufacture out of any oleaginous substance or substances, or any compound of the same; other than that produced from unadulterated milk, or of cream from the same, any article designed to take the place of butter or cheese produced from pure, unadulterated milk or cream of the same, or shall sell, or offer for sale, the same as an article of food. This provision shall not apply to pure skim milk cheese, made from pure skim milk. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than two hundred dollars nor more than five hundred dollars, or not less than six months' or more than one year's imprisonment, or both such fine and imprisonment for the first offense, and by imprisonment for one year for each subsequent offense.

(*Amended by section* 2 *of chapter* 577 *of Laws of* 1886.)

§ 7. No person by himself or his agents or servants shall render or manufacture out of any animal fat or animal or vegetable oils not produced from unadulterated milk or cream from the same, any article or product in imitation or semblance of or designed to take the place of natural butter or cheese produced from pure unadulterated milk or cream of the same, nor shall he or they mix, compound with, or add to milk, cream or butter, any acids or other deleterious substance or any animal fats or animal or vegetable oils not produced from milk or cream, with design or intent to render, make or produce any article or substance or any human food in imitation or semblance of natural butter or cheese, nor shall he sell, keep for sale, or offer for sale any article, substance or compound made, manufactured or produced in violation of the provision of this section, whether such article, substance or compound shall be made or produced in this State or in any other State or country. Whoever violates the provisions of this section shall be guilty of a misdemeanor and be punished by a fine of not less than two hundred dollars nor more than five hundred dollars, or not less than six months' or more than one year's imprisonment for the first offense, and by imprisonment for one year for each subsequent offense. Nothing in this section shall impair the provisions of section six of this act.

(*Amended by section* 3 *of chapter* 577 *of Laws of* 1886.)

§ 8. No person shall manufacture, mix or compound with or add to natural milk, cream or butter any animal fats or animal or vegetable oils, nor shall he make or manufacture any oleaginous substance not produced from milk or cream, with intent to sell the same for butter or cheese made from unadulterated milk or cream or have the same in his possession, or offer the same for sale with such intent, nor shall any article or substance or compound so made or produced, be sold for butter or cheese, the product of the dairy. If any person shall coat, powder or color with annotto or any coloring matter whatever butterine or oleomargarine, or any compounds of the same or any product or manufacture made in the whole or in part from animal fats or animal or vegetable oils not produced from unadulterated milk or cream whereby the said product, manufacture or compound shall be made to resemble butter or cheese, the product of the dairy, or shall have the same in his possession, or shall sell or offer for sale or have in his possession any of the said products which shall be colored or coated in semblance of or to resemble butter or cheese, it shall be conclusive evidence of an intent to sell the same for butter or cheese the product of the dairy. Whoever violates any of the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than two hundred dollars nor more than one thousand dollars. This section shall not be construed to impair or affect the prohibitions of sections six and seven of this act.

§ 9. Every manufacturer of full-milk cheese may put a brand upon each cheese indicating "full-milk cheese," and the date of the month and year when made; and any person using this brand upon any cheese made from which any cream whatever has been taken shall be guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than one hundred dollars nor more than five hundred dollars.

§ 10. No person shall offer, sell or expose for sale in full packages, butter or cheese branded or labeled with a false brand or label as to county or State in which the article is made. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars or more than fifty dollars, or imprisonment of not less than fifteen days or more than thirty days for the first offense, and fifty dollars or thirty days' imprisonment for each subsequent offense.

§ 11. No person shall manufacture, sell or offer for sale any condensed milk, unless the same shall be put up in packages upon which shall be distinctly labeled or stamped the name, or brand, by whom or under which the same is made. No condensed milk shall be made, or offered for sale, unless the same is manufactured from pure, clean, healthy, fresh, unadulterated and wholesome milk, from which the cream has not been removed, or unless the proportion of milk solids contained in the condensed milk shall be in amount the equivalent of twelve per centum of milk solids in crude milk, and of such solids twenty-five per centum shall be fat. When condensed milk shall be sold from cans, or packages not hermetically sealed, the vendor shall brand or label such cans or packages with the name of the county or counties from which the same was produced, and the name of the vendor. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than fifty dollars or more than five hundred dollars, or by imprisonment of not more than six months, or by both such fine and imprisonment for the first offense, and by six months' imprisonment for each subsequent offense.

§ 12. Upon the expiration of the term of office of the present commissioner, the Governor, by and with the advice and consent of the Senate, shall appoint a commissioner, who shall be known as the New York State Dairy Commissioner, who shall be a citizen of this State, and who shall hold his office for the term of two years, or until his successor is appointed, and shall receive a salary of three thousand dollars per annum, and his necessary expenses incurred in the discharge of his official duties under this act. Said commissioner shall be charged, under the direction of the Governor, with the enforcement of the various provisions thereof, and with all laws prohibiting or regulating the adulteration of butter, cheese or milk. The said commissioner is hereby authorized and empowered to appoint such assistant commissioners and to employ such experts, chemists, agents and such counsel as may be deemed by him necessary for the proper enforcement of this law, their compensation to be fixed by the commissioner. The said commissioner is also authorized to employ a clerk at an annual salary not to exceed twelve hundred dollars. The sum of fifty thousand dollars is hereby appropriated, to be paid for such purpose out of any moneys in the treasury not otherwise appropriated. All charges, accounts and expenses authorized by this act shall be paid by the treasurer of the state upon the warrant of the comptroller, after such expenses have been audited and allowed by the comptroller. The entire expenses of said commissioner shall not exceed the sum appropriated for the purposes of this act. The said commissioner shall make annual reports to the Legislature, on or before the fifteenth day of January of each year, of his work and proceedings, and shall report in detail the number of assistant commissioners, experts, chemists, agents and counsel he has employed, with their expenses and disbursements. The said commissioner shall have a room in the New Capitol, to be set apart for his use by the capitol commissioner. The said commissioner and assistant commissioners and such experts, chemists, agents and counsel as they shall duly authorize for the purpose, shall have full access, egress and ingress to all places of business, factories, farms, buildings, carriages, vessels and cans used in the manufacture and sale of any dairy products or any imitation thereof. They shall also have power and authority to open any package, can or vessel containing such articles which may be manufactured, sold or exposed for sale, in violation of the provisions of this act, and may inspect the contents therein and may take therefrom samples for analysis. This section shall not affect the tenure of the office of the present commissioner.

§ 13. Upon the application for a warrant under this act, the certificate of the analyst or chemist of any analysis made by him shall be sufficient evidence of the facts therein stated. Every such certificate shall be duly signed and acknowledged by such analyst or chemist before an officer authorized to take acknowledgment of conveyances of real estate.

§ 14. Courts of Special Sessions shall have jurisdiction of all cases arising under this act, and their jurisdiction is hereby extended so as to enable them to enforce the penalties imposed by any or all sections thereof.

(*Amended by section* 4 *of chapter* 577 *of Laws of* 1886.)

§ 15. In all prosecutions under this act, one-half of the money shall be paid by the court or clerk thereof to the city or county where the recovery shall be had, for the support of the poor, except in the city and county of New York, shall be equally divided between the pension funds of the police and fire departments, and the residue shall be paid to the Dairy Commissioner, who shall account therefor to the treasurer of the State, and be added to any appropriation made to carry out the provisions of this act. All sums of money expended by the Dairy Commissioner under the provisions of this act, shall be audited and allowed by the comptroller of the State. Any bond given by any officer shall be subject to the provisions of this section.

(*Amended by chapter* 430 *of Laws of* 1887.)

§ 16. In all prosecutions under this act relating to the sale and manufacture of unclean, impure, unhealthy, adulterated or unwholesome milk, if the milk be shown to contain more than eighty-eight per centum of water or fluids, or less than twelve per centum of milk solids, which shall contain not less than three per centum of fat, it shall be declared adulterated, and milk drawn from cows within fifteen days before, and five days after, parturition, or from animals fed on distillery waste, or any substance in the state of putrefaction or fermentation, or upon any unhealthy food whatever, shall be declared unclean, unhealthy, impure and unwholesome milk. This section shall not prevent the feeding of ensilage from silos.

(*Amended by section* 4 *of chapter* 458 *of Laws of* 1885.)

§ 17. The doing of anything prohibited being done, and the not doing of anything directed to be done in this act, shall be presumptive evidence of a willful intent to violate the different sections and provisions thereof. If any person shall suffer any violation of the provisions of this act by his agent, servant, or in any room or building occupied or controlled by him, he shall be deemed a principal in such violation and punished accordingly.

§ 18. Chapter four hundred and sixty-seven of the Laws of eighteen hundred and sixty-two, five hundred and forty-four and five hundred and eighteen of the Laws of eighteen hundred and sixty-four, five hundred and fifty-nine of the Laws of eighteen hundred and sixty-five, four hundred and fifteen of the Laws of eighteen hundred and seventy-seven, two hundred and twenty and two hundred and thirty-seven of the Laws of eighteen hundred and seventy-eight, four hundred and thirty-nine of the Laws of eighteen hundred and eighty, and two hundred and fourteen of the Laws of eighteen hundred and eighty-two, are hereby repealed.

(*Amended by section* 5 *of chapter* 577 *of Laws of* 1886, *and by section* 2 *of chapter* 583 *of Laws of* 1887.)

§ 19. If any person shall, by himself or another, violate any of the provisions of sections one, two, three, four or five of this act, or knowingly suffer a violation thereof by his agent, or in any building or room occupied by him, he shall in addition to the fines and punishments therein prescribed for each offense, forfeit and pay a fixed penalty of one hundred dollars. If any person, by himself or another, shall violate any of the provisions of section six, seven or eight of this act, he shall, in addition to the fines and penalties herein prescribed for each offense, forfeit and pay a fixed penalty of five hundred dollars. Such penalties shall be recovered with costs in any court of this State having jurisdiction thereof, in an action to be prosecuted by the Dairy Commissioner or any of his assistants in the name of the people of the State of New York.

§ 20. This act and each section thereof is declared to be enacted to prevent deception in the sale of dairy products, and to preserve the public health which is endangered by the manufacture, sale or use of the articles or substances herein regulated or prohibited.

§ 21. This act shall take effect immediately. Sections six and seven shall not apply to any product manufactured, or in process of manufacture at the time of the passage of this act; but neither this exemption nor this act shall impair the power to prosecute any violations heretofore committed of section six of the act of which this act is supplemental.

Chapter 193.

AN ACT to amend chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products."

PASSED April 30, 1885; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section seven of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products," is hereby amended to read as follows:

§ 7. No person shall offer, sell or expose for sale butter or cheese branded or labeled with a false brand or label as to the quality of the article or the county or State in which the article is made. The New York State Dairy Commissioner is hereby authorized and directed to procure and issue to the cheese manufactories of the State, upon proper application therefor and under such regulations as to the custody and use thereof as he may prescribe, a uniform stencil brand bearing a suitable device or motto, and the words "New York State full cream cheese." Every brand issued shall be used upon the outside of the cheese and also upon the package containing the same, and shall bear a different number for each separate manufactory, and the commissioner shall keep a book in which shall be registered the name, location and number of each manufactory using the said brand, and the name or names of the persons at each manufactory authorized to use the same. It shall be unlawful to use or permit such stencil brand to be used upon any other than full cream cheese or packages containing the same. Whoever violates the provisions of this section is guilty of a misdemeanor, and for each and every cheese or package so falsely branded shall be punished by a fine of not less than twenty-five dollars or more than fifty dollars, or imprisonment of not less than fifteen or more than thirty days.

§ 2. This act shall take effect immediately.

Chapter 427.

AN ACT to protect butter and cheese manufacturers.

PASSED June 8, 1885; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Whoever shall with intent to defraud, sell, supply or bring to be manufactured to any butter or cheese manufactory in this State, any milk diluted with water, or in any way adulterated, unclean or impure, or milk from which any cream has been taken, or milk commonly known as skimmed milk, or whoever shall keep back any part of the milk as strippings, or whoever shall knowingly bring or supply milk to any butter or cheese manufactory, that is tainted or sour, or whoever shall knowingly bring or supply to any butter or cheese manufactory, milk drawn from cows within fifteen days before parturition, or within three days after parturition, or any butter or cheese manufacturers who shall knowingly use or allow any of his or her employes or any other persons to use for his or her benefit, or for their own individual benefit, any milk or cream from the milk brought to said butter or cheese manufacturer, without the consent of all the owners thereof, or any butter or cheese manufacturer who shall refuse or neglect to keep or cause to be kept a correct account, open to the inspection of any one furnishing milk to such manufacturer, of the amount of milk daily received, or of the number of pounds of butter and the number of cheese made each day, or of the number cut or otherwise disposed of, and the weight of each, shall for each and every offense forfeit and pay a sum not less than twenty-five dollars nor more than one hundred dollars, with costs of suit to be sued for in any court of competent jurisdiction for the benefit of the person or persons, firm or association, or corporation or their assigns upon whom such fraud or neglect shall be committed. But nothing in this act shall affect, impair or repeal any of the provisions of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, or of the acts amendatory thereof or supplementary thereto.

§ 2. This act shall take effect immediately.

Chapter 458.

An Act to amend chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health," being supplementary to and in aid of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in the sales of dairy products.'"

Passed June 9, 1885; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section six of chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products,'" is amended to read as follows:

Invalid — (People v. Marx).

§ 6. No person shall manufacture out of any oleaginous substance or substances, or any compound of the same, other than that produced from unadulterated milk, or of cream from the same, any article designed to take the place of butter or cheese produced from pure unadulterated milk or cream of the same, or shall sell, or offer for sale, the same as an article of food. This provision shall not apply to pure skim milk cheese, made from pure skim milk. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars nor more than five hundred dollars, or not less than six months' or more than one year's imprisonment, or both such fine and imprisonment for the first offense, and by imprisonment for one year for each subsequent offense.

§ 2. Section seven of said act is amended so as to read as follows:

(*Amended by section* 2, *chapter* 577 *of Laws of* 1886.)

§ 7. No person by himself or his agents or servants shall render or manufacture out of any animal fat or animal or vegetable oils not produced from unadulterated milk or cream from the same, any article or product in imitation or semblance of or designed to take the place of natural butter or cheese produced from pure unadulterated milk or cream of the same, nor shall he or they mix, compound with, or add to milk, cream or butter any acids or other deleterious substance or any animal fats or animal or vegetable oils not produced from milk or cream, with design or intent to render, make or produce any article or substance or any human food in imitation or semblance of natural butter or cheese, nor shall he sell, keep for sale, or offer for sale any article, or substance or compound made, manufactured or produced in violation of the provisions of this section, whether such article, substance or compound shall be made or produced in this State or any other State or country. Whoever violates the provisions of this section shall be guilty of a misdemeanor and be punished by a fine of not less than one hundred dollars nor more than five hundred dollars, or not less than six months' or more than one year's imprisonment for the first offense, and by imprisonment for one year for each subsequent offense. Nothing in this section shall impair the provisions of section six of this act.

§ 3. Section eight of said act is amended so as to read as follows:

(*Amended by section* 3 *of chapter* 577 *of Laws of* 1886.)

§ 8. No person shall manufacture, mix or compound with or add to natural milk, cream or butter any animal fats or animal or vegetable oils, nor shall he make or manufacture any oleaginous substance not produced from milk or cream, with intent to sell the same for butter or cheese made from unadulterated milk or cream, or have the same in his possession, or offer the same for sale with such intent, nor shall any article or substance or compound so made or produced, be sold for butter or cheese, the product of the dairy. If any person shall coat, powder or color with annotto or any coloring matter whatever butterine or oleomargarine, or any compounds of the same or any product or manufacture made in whole or in part from animal fats or animal or vegetable oils not produced from unadulterated milk or cream whereby the said product, manufacture or compound shall be made to resemble butter or cheese, the product of the dairy, or shall have the same in his possession, or shall sell or offer for sale or have in his possession any of the said products which shall be colored or coated in semblance of or to resemble butter or cheese, it shall be conclusive evidence of an intent to sell the same for butter or cheese, the product of the dairy. Whoever violates any of the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars nor more than one thousand dollars. This section shall not be construed to impair or affect the prohibitions of sections six and seven of this act.

§ 4. Section seventeen of said act is amended so as to read as follows:

§ 17. The doing of anything herein prohibited being done, shall be evidence of a violation of the provisions of this act relative to the thing so prohibited; and the not doing of anything herein directed to be done, shall be evidence of a violation of the provisions of this act relative to the thing so directed to be done. If any person shall suffer any violation of the provisions of this act by his agent, servant, or in any room or building occupied or controlled by him, he shall be deemed a principal in such violation and punished accordingly.

§ 5. This act shall take effect immediately.

Chapter 577.

AN ACT to amend chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health," being supplementary to and in aid of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products."

PASSED June 4, 1886; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section one of chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health," being supplementary to and in aid of chapter two hundred and two of the Laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products," is hereby amended so as to read as follows:

(*Amended by chapter* 223 *of Laws of* 1887.)

§ 1. No person or persons shall sell or exchange, or expose for sale or exchange, any unclean, impure, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same, or of cream from the same. The provisions of this section shall not apply to skimmed milk sold for use in the county in which it is produced, provided it is sold for and as such. This provision shall not apply to pure skim cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars, or by imprisonment of not less than one month or more than six months, or by both such fine and imprisonment, for the first offense, and by six months' imprisonment for each subsequent offense.

§ 2. Section seven of chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, as amended by chapter four hundred and fifty-eight, of the Laws of eighteen hundred and eighty-five, is hereby amended so as to read as follows:

§ 7. No person by himself or his agents or servants shall render or manufacture out of any animal fat or animal or vegetable oils not produced from unadulterated milk or cream from the same, any article in imitation or semblance of natural butter or cheese produced from pure unadulterated milk or cream of the same, nor mix, compound with, or add to milk, cream or butter any acids or other deleterious substance or any animal fats or animal or vegetable oils not produced from milk or cream, so as to produce any article or substance or any human food in imitation or semblance of natural butter or cheese, nor sell, keep for sale, or offer for sale, any article, substance or compound made, manufactured or produced in violation of the provisions of this section, whether such article, substance or compound shall be made or produced in this State or elsewhere. This section shall not be so construed as to require evidence of a willful or intentional violation thereof. Whoever violates the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars, nor more than five hundred dollars or not less than six months or more than one year's imprisonment for the first offense, and by imprisonment for one year for each subsequent offense. Nothing in this section shall impair the provisions of section six of this act.

§ 3. Section eight of chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, as amended by chapter four hundred and fifty-eight of the Laws of eighteen hundred and eighty-five, is hereby further amended so as to read as follows:

§ 8. No person shall manufacture, mix or compound with or add to natural milk, cream or butter any animal fats or animal or vegetable oils, nor shall he make or manufacture any oleaginous substance not produced from milk or cream, with intent to sell the same for butter or cheese made from unadulterated milk or cream, or have the same in his possession, or offer the same for sale with such intent, nor shall any article or substance or compound so made or produced, be sold intentionally or otherwise as and for butter or cheese, the product of the dairy. No person shall coat, powder or color with annotto or any coloring matter whatever, butterine or oleomargarine, or any compounds of the same or any product or manufacture made in whole or in part from animal fats or animal or vegetable oils not produced from unadulterated milk or cream whereby the said product, manufacture or compound shall resemble butter or cheese, the product of the dairy, or shall have the same in his possession, with intent to sell the same, or shall sell or offer the same for sale. No person shall be excused from liability under this section or section seven of this act on account of want of knowledge of the nature or ingredients of the product so in his possession, sold or offered for sale by him. Whoever violates any of the provisions of this section shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars nor more than one thousand dollars. This section shall not be construed to impair or affect the prohibitions of sections six and seven of this act.

§ 4. Section fifteen of such act, chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, is hereby amended so as to read as follows:

§ 15. In all prosecutions under this act, one-half of the money shall be paid by the court or clerk thereof to the city or county where the recovery shall be had, for the support of the poor, except in the city and county of New York, and the city of Brooklyn shall be equally divided between the pension funds of the police and fire departments, and the residue shall be paid to the treasury of the State. All sums of money expended by the Dairy Commissioner under the provisions of this act, shall be audited and allowed by the Comptroller of the State. Any bond given by any officer shall be subject to the provisions of this section.

§ 5. Section nineteen of such act, chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, is hereby amended so as to read as follows:

(*Amended by section* 2 *of chapter* 583 *of Laws of* 1887.)

§ 19. If any person shall, by himself or another, violate any of the provisions of sections one, two, three, four or five of this act, or knowingly suffer a violation thereof by his agent, or in any building or room occupied by him, he shall in addition to the fines and punishments therein prescribed, for each offense forfeit and pay a fixed penalty of one hundred dollars. If any person, by himself or another, shall violate any of the provisions of sections six, seven or eight of this act, he shall, in addition to the fines and penalties herein prescribed, for each offense forfeit and pay a fixed penalty of five hundred dollars. Such penalties shall be recovered with costs in any court of this State having jurisdiction thereof, in an action to be prosecuted by the Dairy Commissioner or any of his assistants or by any citizen authorized to sue in the name of the people of the State of New York.

§ 6. The following sections are added to said act, chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five:

(*Amended by section* 3 *of chapter* 583 *of Laws of* 1887.)

§ 22. For the purposes of said act chapter one hundred and eighty-three of the Laws of eighteen hundred and eighty-five, as amended by chapter four hundred and fifty-eight of the Laws of eighteen hundred and eighty-five, and as hereby amended, the terms "natural butter and cheese," "natural butter or cheese produced from pure unadulterated milk or cream of the same," "butter or cheese made from unadulterated milk or cream," "butter or cheese the product of the dairy," and "butter or cheese" shall be understood to mean the products usually known by the terms "butter" and "cheese" and which are manufactured exclusively from milk or cream. or both, with salt and rennet, and with or without coloring matter or sage.

§ 23. The prosecution shall not be compelled to elect in any trial for the misdemeanors wheresoever committed, or suit for the penalties wheresoever incurred by the violations of sections six, seven or eight where the indictment, information or complaint charges a violation of any two or all such sections of said act, as amended, between the charges or counts under such different sections whether such prosecutions or suits have already been commenced or shall hereafter be instituted.

§ 24. An action now or hereafter brought to recover a penalty provided by section nineteen of said act chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, shall have a preference upon the calendar of the courts of record of this State next after civil causes entitled to a preference under the provisions of subdivision one of section seven hundred and ninety-one of the Code of Civil Procedure, where the attorney for the people therein has given notice, at the time of the service of notice of trial or argument, of a particular day in a term on which he will move it. If the action is not moved by him for trial or argument on that day, or as soon thereafter in the same term as the court can hear it the other party may then move the trial or argument, otherwise it shall not be moved out of its order at that term except by the special order of the court. The note of issue filed by such attorney for the people shall state the day in the term on which he has given notice that he will move it, and the clerk of the court shall place such cause upon the day calendar of that day as a preferred cause as hereinbefore provided. No order for the clerk to do so shall be necessary.

§ 25. Actions for penalties under the provisions of this act and of the act of which this is amendatory may be brought and prosecuted in the name of the people of the State of New York by any citizen of the State, and the citizen so prosecuting said action shall be entitled to and shall receive one-half of the penalty or judgment recovered. The balance of the judgment or recovery shall be paid over to the city or county in which the action is brought as provided by section fifteen of chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five. Any citizen so prosecuting shall execute and file an undertaking with the court in which the action is brought in the penalty of one hundred dollars conditioned for the payment of any costs which the defendant in the action may recover.

§ 7. This act shall take effect on the first day of August, eighteen hundred and eighty-six; but the sections as herein amended shall not apply to any product manufactured or in process of manufacture on the first day of August, eighteen hundred and eighty-six. This act shall not impair the power to prosecute any violations committed prior to the time of its taking effect, of the sections hereby amended pursuant to it and in the manner and under the rules and regulations provided by such sections as they existed prior to the passage of this act. This act is declaratory of the existing law.

Chapter 223.

An Act to amend chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled "An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled 'An act to prevent deception in the sale of dairy products, and to preserve the public health,' being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in the sales of dairy products.'"

Passed April 27, 1887; three-fifths being present; without the approval of the Governor.*

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section one of chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled "An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled 'An act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products,'" is hereby amended so as to read as follows:

§ 1. No person or persons shall sell or exchange, or expose for sale or exchchange,† any unclean, impure, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same, or of cream from the same. The provisions of this section shall not apply to skimmed milk sold for use in the county in which it is produced, provided it is sold for and as such. This provision shall not apply to pure skim cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars or by imprisonment of not less than one month or more than six months, or by both such fine and imprisonment for the first offense; and by a fine of not less than fifty dollars nor more than four hundred dollars or by imprisonment of not less than one month nor more than six months, or by both such fine and imprisonment for a second offense; and for a third or any subsequent offense by a fine of not less than two hundred dollars and imprisonment not less than thirty days and not exceeding three months.

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* Not returned by the Governor within ten days after it was presented to him, and became a law without his signature. [Art. IV, Sec. 9, Constitution of the State of New York.

† So in the original.

§ 2. This act shall take effect immediately.

Chapter 430.

AN ACT to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in the sale of dairy products.'"

PASSED May 23, 1887; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section sixteen of chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products,'" is hereby amended so as to read as follows:

§ 16. When any officer, authorized by this act to inspect milk offered for sale shall, in the discharge of his duties, take a sample of milk for purposes of analysis, it shall be his duty to take duplicate samples thereof, in the presence of at least one witness, and he shall, in the presence of such witness, seal both of the said samples, and shall tender and if accepted deliver, at the time of such taking, one sample to the vender of said milk or to the person having custody of the same with a statement, in writing, of the cause of the sample having been taken. In all prosecutions, under this act, relating to the manufacture and sale of unclean, impure, unhealthy, adulterated or unwholesome milk, if the milk be shown to contain more than eighty-eight per centum of water or fluids, or less than twelve per centum of milk solids, which shall contain not less than three per centum of fat, it shall be declared adulterated; and milk drawn from cows within fifteen days before, and five days after, parturition, or from animals fed on distillery waste, or any substance in the state of fermentation or putrefaction, or upon any unhealthy food whatever, shall be declared unclean, unhealthy, impure and unwholesome milk. This section shall not prevent the feeding of ensilage.

§ 2. This act shall take effect immediately.

Chapter 583.

AN ACT to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products,' as amended by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled 'An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled An act to prevent deception in the sale of dairy products and to preserve the public health,' being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products.'"

PASSED June 16, 1887; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The following sections are added to said act chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products, and to preserve the public health," being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled "An act to prevent deception in sales of dairy products," as amended by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled "An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled 'An act to prevent deception in the sale of dairy products and to preserve the public health,' being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products.'"

§ 26. A search warrant, in the name of the people, directed to a peace officer commanding him to search for dairy products, imitations thereof and substitutes therefor, to open any place of business, factory, building, store, bakery, hotel, tavern, boarding-house, restaurant, saloon, lunch counter, place of public entertainment, carriage, car, boat, package, vessel, barrel, box, tub or can, containing, or believed to contain the same, in the possession or under the control of any person who shall refuse to allow the same to be inspected or samples taken therefrom by the said commissioner, assistant commissioner, or such experts, chemists, agents, or counsel as such commissioner or assistant commissioner shall duly authorize, for the purpose, or to which access is refused or prevented, and to allow and enable the officer mentioned in section twelve applying therefor to take such samples of dairy products, imitations thereof and substitutes therefor, found in the execution of the warrant, as the officer applying for the search warrant shall designate when the same are found, shall be issued by any magistrate to whom application is made therefor, whenever it shall be made to appear to him that such person has refused to permit any dairy products, imitations thereof or substitutions therefor, to be inspected or samples taken therefrom, or that access thereto by any officer mentioned in section twelve has been refused or prevented, and that such officer has reasonable grounds for believing that such person has any dairy products, imitations thereof or substitutes therefor in his possession, or under his control, or that he is violating any of the provisions of this act. The provisions of section seven hundred and ninety-one to section eight hundred and two, both inclusive, of the Code of Criminal Procedure, shall apply to such warrant as far as applicable thereto. The peace officer to whom the warrant is delivered shall make a return in writing of his proceedings thereunto to the magistrate who issued the same.

§ 27. No keeper or proprietor of any bakery, hotel, tavern, boarding-house, restaurant, saloon, lunch counter, or place of public entertainment, or any person having charge thereof or employed thereat, shall keep, use or serve therein, either as food for their guests, boarders, patrons or customers, or for cooking purposes, any article made in violation of the provisions of section seven of this act, as amended by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six. This section shall not be construed as to require evidence of a willful or intentional violation thereof. Whoever violates the provisions of this section shall be guilty of a misdemeanor and punished by a fine of not less than fifty dollars, nor more than two hundred dollars, or not less than ten days' or more than thirty days' imprisonment for the first offense, and by imprisonment for one year for each subsequent offense.

§ 2. Section nineteen of such act, chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, as amended by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, is hereby amended so as to read as follows:

§ 19. If any person shall, by himself or another, violate any of the provisions of sections one, two, three, four or five of this act, or knowingly suffer a violation thereof by his agent, or in any building or room occupied by him, he shall in addition to the fines and punishments therein prescribed, for each offense forfeit and pay a fixed penalty of one hundred dollars. If any person, by himself or another, shall violate any of the provisions of section six, seven, eight or twenty-seven of this act, he shall, in addition to the fines and penalties therein prescribed for each offense forfeit and pay a fixed penalty of five hundred dollars. Such penalty shall be recovered, with costs, in any court of this State having jurisdiction thereof, in an action to be prosecuted by the Dairy Commissioners or any of his assistants, or by any citizen authorized to sue in the name of the people of the State of New York. In any action heretofore or hereinafter commenced in the Supreme Court for the recovery of such penalties an application may be made on the part of the plaintiff to said court or any justice thereof, for an injunction to restrain the defendant, his agents, servants and employes from the further violation of the sections or section on which such action is based during the pendency thereof; and it shall be the duty of such court or justice to grant the injunction upon proof by affidavits that the defendant has been guilty of a violation of such sections or section as alleged in the complaint, or subsequent to the commencement of the action has been guilty of a violation thereof, and in the same manner as injunctions are usually granted under the rules and practice of such court. No security on the part of the plaintiffs shall be required upon the granting of such injunction; and the court or justice shall make such order thereon as to the costs of the application as may be deemed just and proper. In case the plaintiff shall recover judgment for the penalties or penalty demanded in the complaint, the said judgment shall contain a permanent injunction restraining the defendant, his agents, servants and employes from any further violations of the sections or section on which the recovery is obtained. Any injunction secured under this section may be served by posting the same upon the outer door of the defendant's usual place of business, or where such violation was committed, or shall hereafter be committed, or in the manner required by the Code of Civil Procedure and the rules and practice of the court. It shall not be necessary to prove the personal service of the injunction where such service can not be secured with reasonable diligence, but the service hereinbefore provided shall be deemed and held sufficient in any proceeding for the violation of such injunction.

§ 3. Section twenty-two of such act chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, as added thereto by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, is hereby amended so as to read as follows:

§ 22. For the purpose of said act, chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, as amended by chapter four hundred and fifty-eight of the laws of eighteen hundred and eighty-five, and by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, and as hereby amended, the terms "natural butter and cheese," "natural butter or cheese produced from pure unadulterated milk or cream of the same," "butter or cheese from unadulterated milk or cream," "butter or cheese, the product of the dairy," and "butter or cheese," shall be understood to mean the produts* usually known by the terms "butter" and "cheese," and which are manufactured exclusively from milk or cream, or both, with or without salt or rennet, or both, and with or without coloring matter or sage, or both.

§ 4. This act shall take effect immediately. Section three and section twenty-seven, hereby added to such act chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, shall not apply to any product manufactured, or in process of manufacture, at the time of the passage of this act; but neither this exemption ncr this act shall impair the power to prosecute any violations committed prior to the time of its taking effect of the sections hereby amended or of any laws existing at the time of its taking effect pursuant to and in the manner and under the rules and regulations provided by such sections and laws as they existed prior to the passage of this act.

Chapter 298.

An Act to promote agriculture and to improve the quality of butter and cheese.

Approved by the Governor May 15, 1888. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The New York State Dairy Commissioner is authorized, empowered and directed to appoint and employ expert butter and cheese makers, not exceeding five in number, whose duty it shall be, under his directions, to examine and inspect butter and cheese factories and the methods employed therein, and attend at such agricultural fairs, institutes, meetings and conventions, within the State, as shall be designated by the commissioner, to impart thereat information as to the best and most approved methods of making butter and cheese and improving the quality thereof. The compensation of such experts shall be fixed by the commissioner and their necessary expenses incurred in the performance of their duties audited by him; and the same shall be paid by the Treasurer of the State upon the warrant of the Comptroller thereafter. The sum of five thousand dollars is hereby appropriated for such purpose, to be paid out of any moneys the treasury not otherwise appropriated; and the entire expenses of the commissioner under this act shall not exceed such sum. The commissioner on or before the fifteenth day of December of this year shall report the number of experts employed under this act and their compensation and expenses, which shall be included in his annual report.

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* So in the original.

§ 2. This act shall take effect immediately.

Chapter 550.

AN ACT to amend chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled "An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled 'An act to prevent deception in the sales of dairy products, and to preserve the public health,' being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in the sale of dairy products,'" as amended by chapter two hundred and twenty-three of the laws of eighteen hundred and eighty-seven.

APPROVED by the Governor June 9, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section one of chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six, entitled "An act to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled 'An act to prevent deception in the sale of dairy products, and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled

'An act to prevent deception in the sales of dairy products,' " as amended by chapter two hundred and twenty-three of the laws of eighteen hundred and eighty-seven, is hereby amended so as to read as follows:

§ 1. No person or persons shall sell or exchange, or expose for sale or exchange, any unclean, impure, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same, or cream from the same. The provisions of this section shall not apply to skimmed milk sold for use in the county in which it is produced, and the adjoining counties, except in New York and Kings counties, (where it shall apply), provided it is sold for and as such. This provision shall not apply to pure skim cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five dollars nor more than two hundred dollars or by imprisonment of not less than one month or more than six months, or by both such fine and imprisonment for the first offense; and by a fine of not less than fifty dollars nor more than four hundred dollars or by imprisonment of not less than one month nor more than six months, or by both such fine and imprisonment for a second offense, and for a third or any subsequent offense by a fine of not less than two hundred dollars and imprisonment not less than thirty days and not exceeding three months.

§ 2. This act shall take effect immediately.

Chapter 515.

An Act to prevent deception in the sales of vinegar, and charging the New York State Dairy Commissioner with its enforcement.

Approved by the Governor June 15, 1889. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. No person shall manufacture, produce, sell, keep for sale or offer for sale any vinegar which shall not have an acidity equivalent to the presence at least of four and one-half percentum, by weight, of absolute acetic acid, or any cider vinegar which shall have less than such amount of acidity, or less than two per-centum, by weight, of cider vinegar solids upon full evaporation over boiling water.

§ 2. No person shall manufacture, produce, sell, keep for sale or offer for sale any vinegar or product in imitation or semblance of cider vinegar which is not cider vinegar.

§ 3. No person shall sell, keep for sale or offer for sale, as or for cider vinegar, any vinegar or product which is not cider vinegar.

§ 4. No person shall manufacture, produce, sell, keep for sale or offer for sale any vinegar which shall contain any preparation of lead, copper, sulphuric acid or other ingredients injurious to health, or any artificial coloring matter.

§ 5. Every manufacturer or producer of cider vinegar shall plainly brand on each head of the cask, barrel, keg or other package containing such vinegar, his name and place of business, and the words "cider vinegar;" and no person shall label or brand as or for cider vinegar any package containing vinegar which is not cider vinegar.

§ 6. Whoever, by himself or another, violates any of the provisions of any of the foregoing sections shall be guilty of a misdemeanor and, upon conviction, shall be punished by a fine of not less than fifty dollars nor more than one hundred dollars.

§ 7. If any person, by himself or another, shall violate any of the provisions of sections one, two, three, four or five of this act, he shall, in addition to the fines and penalties herein prescribed for each offense, forfeit and pay a fixed penalty of two hundred dollars for each offense. Such penalties shall be recovered with costs in any court of this State having jurisdiction thereof, in an action to be prosecuted by the New York State Dairy Commissioner or any of his assistants in the name of the people of the State of New York.

§ 8. The prosecution shall not be compelled to elect in any trial for the misdemeanors or suit for the penalties for the violation of sections one, two, three, four or five, where the indictment, information or complaint charges a violation of any two or more of such sections, between the charges or counts under such different sections.

§ 9. The New York State Dairy Commissioner is charged with the enforcement of the provisions of this act. The sum of five thousand dollars is hereby appropriated to be paid for such purpose out of any moneys in the treasury not otherwise appropriated, and the same shall be paid by the Treasurer of the State upon the warrant of the Comptroller upon the certificate of the State Dairy Commissioner. The entire expenses of said commissioner in the enforcement of the provisions of this act shall not exceed the sum appropriated for the purposes aforesaid. Such Commissioner shall include in his annual report to the Legislature a statement in detail of his work and proceedings, the number of assistant commissioners, chemists, experts, agents and counsel employed under the provisions of this act, and their compensation, expenses and disbursements. The said Commissioner and assistant commissioners, and such experts, chemists, agents and counsel as they shall duly authorize for the purpose, shall have full access, egress and ingress to all places of business, factories and buildings where vinegar is made, produced, sold or kept for sale. They shall also have power and authority to open any cask, barrel, keg or other package containing or believed to contain vinegar manufactured, produced, sold, kept for sale, or offered for sale, in violation of the provisions of this act, and may inspect the contents thereof and take therefrom samples for examination and analysis. When any officer authorized by this act to inspect vinegar offered for sale shall, in the discharge of his duties, take samples of vinegar, it shall be his duty to take duplicate samples thereof, in the presence of at least one witness, and he shall, in the presence of such witness, seal both of said samples, and shall tender, and, if accepted, deliver, at the time of such taking, one sample to the vender of said vinegar, or to the person having custody of the same, with a statement, in writing, of the cause of the samples having been taken.

§ 10. For the purposes of this act, the term "cider vinegar" shall be understood to mean vinegar made exclusively of pure apple-juice. Sections one, two and four shall not apply to any vinegar or produce manufactured or in process of manufacture at the time of the passage of this act, but the provisions of law existing at the time of the passage of this act shall apply thereto.

§ 11. Chapter six hundred and six of the laws of one thousand eight hundred and eighty-six, and chapter six hundred and thirty-four of the laws of one thousand eight hundred and eighty-seven, are hereby repealed, but any violations thereof committed prior to the taking effect of this act may be prosecuted under the provisions of such law as they existed prior to the passage of this act.

§ 12. This act shall take effect immediately.

Chapter 140.

An Act further to amend chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, entitled "An act to prevent deception in the sale of dairy products and to preserve the public health, being supplementary to and in aid of chapter two hundred and two of the laws of eighteen hundred and eighty-four, entitled 'An act to prevent deception in sales of dairy products.'"

Approved by the Governor April 7, 1891. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section twenty-seven of chapter one hundred and eighty-three of the laws of eighteen hundred and eighty-five, as added thereto by section one of chapter five hundred and eighty-three of the laws of eighteen hundred and eighty-seven, is hereby amended so as to read as follows:

§ 27. No keeper or proprietor of any bakery, hotel, tavern, boarding-house, restaurant, saloon, lunch counter, or place of public entertainment or of any place where any person or persons, in the employ of the keeper or proprietor thereof, is furnished with board, either without charge or as compensation wholly or in part for his services, or any person having charge thereof or employed thereat, shall keep, use or serve therein, either as food for their guests, boarders, patrons or customers, or for cooking purposes, any article made in violation of the provisions of section seven of this act, as amended by chapter five hundred and seventy-seven of the laws of eighteen hundred and eighty-six. This section shall not be so construed as to require evidence of a willful or intentional violation thereof. Whoever violates the provisions of this section shall be guilty of a misdemeanor and punished by a fine of not less than fifty dollars nor more than two hundred dollars, or not less than ten days' or more than thirty days' imprisonment for the first offense, and by imprisonment for one year for each subsequent offense.

§ 2. This act shall take effect immediately.

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PROFILES OF THE New York State Canals AND Feeders

SHOWING THE ELEVATIONS OF THE WATER SURFACES ABOVE TIDE WATER.

& JUNCTION OF THE LATERAL CANALS WITH THE ERIE.

WESTERN DIVISION. MIDDLE DIVISION. EASTERN DIVISION.

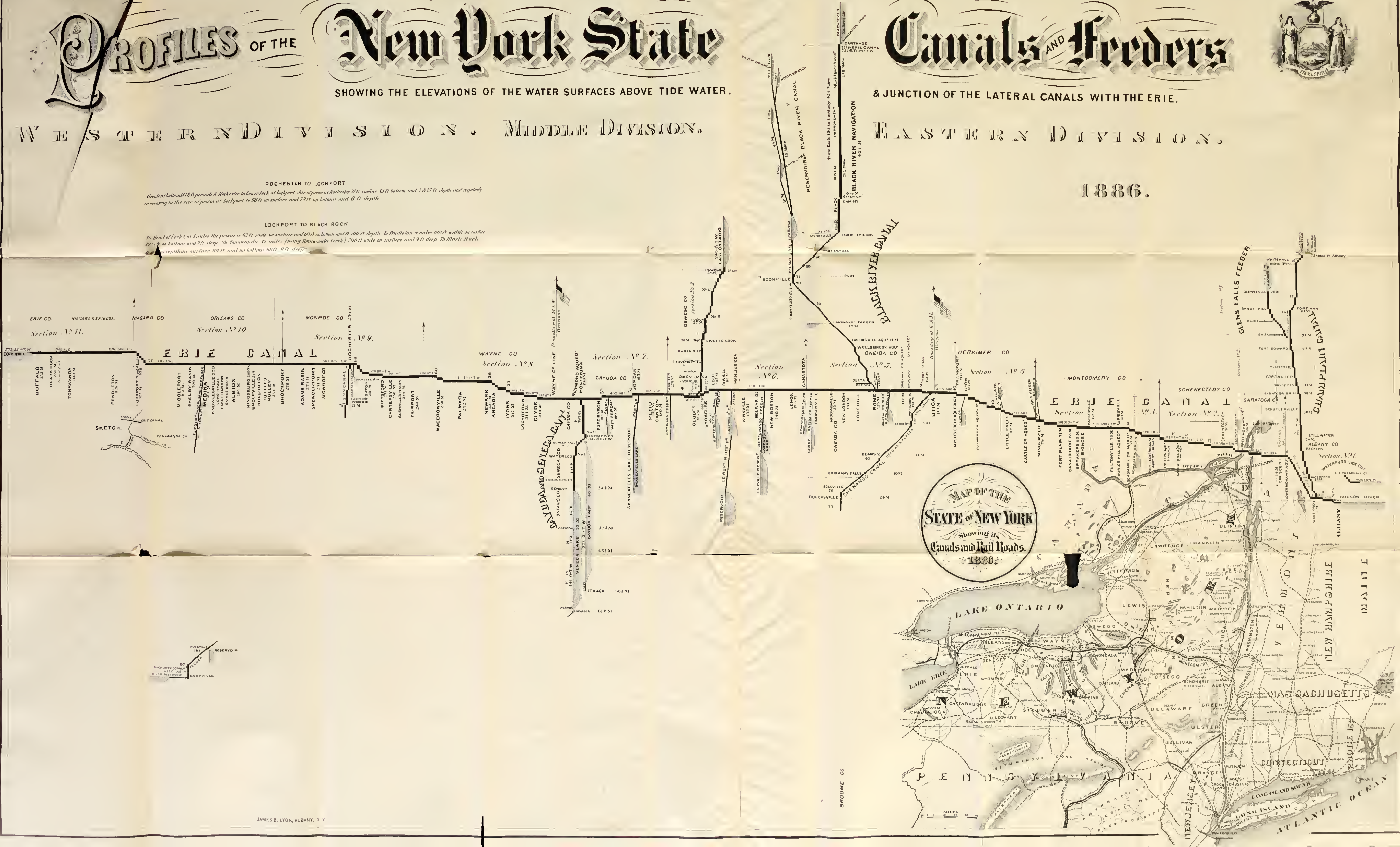
1886.

ROCHESTER TO LOCKPORT

Grade at bottom 0.48 ft per mile fr Rochester to Lower lock at Lockport. Size of prism at Rochester 71 ft surface 53 ft bottom and 7.835 ft depth and regularly increasing to the size of prism at Lockport to 98 ft on surface and 79 ft on bottom and 8 ft depth

LOCKPORT TO BLACK ROCK

To Head of Rock Cut 3 miles the prism is 62 ft wide on surface and 60 ft on bottom and 9.500 ft depth. To Pendleton 4 miles 100 ft width on surface 77½ ft on bottom and 9 ft deep. To Tonawanda 12 miles (using Tonawanda Creek) 200 ft wide on surface and 9 ft deep. To Black Rock [illegible] *width on surface 80 ft and on bottom 60 ft 9 ft deep*



JAMES B. LYON, ALBANY, N.Y.

STATE OF NEW YORK.

ANNUAL REPORT

OF THE

uperintendent of Public Works

ON THE

CANALS OF THE STATE,

FOR THE YEAR ENDING SEPTEMBER 30, 1890,

AND ON

RADE AND TONNAGE OF THE CANALS,

FOR THE YEAR 1890.

ANSMITTED TO THE LEGISLATURE JANUARY, 1891.

ALBANY:
JAMES B. LYON, STATE PRINTER.
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STATE OF NEW YORK.

No. 18.

IN ASSEMBLY,

JANUARY, 1891.

ANNUAL REPORT

OF THE

SUPERINTENDENT OF PUBLIC WORKS.

STATE OF NEW YORK:

OFFICE OF THE SUPERINTENDENT OF PUBLIC WORKS,
ALBANY, *January*, 1891.

To the Honorable the Speaker of the Assembly:

SIR.—As required by law, I have the honor herewith to present to the Legislature the Annual Report of this Department for the fiscal year ended September 30, 1890, and the report on the trade and tonnage of the canals of this State, for the year 1890.

EDWARD HANNAN,
Superintendent of Public Works.

REPORT.

OFFICE OF THE SUPERINTENDENT OF PUBLIC WORKS,
ALBANY, N. Y., *December* 12, 1890.

To the Honorable the Legislature of the State of New York:

The Superintendent of Public Works has the honor to submit herewith, in obedience to the requirements of law, the following report for the fiscal year ending September 30, 1890.

The expenditures of the department have been as follows:

ORDINARY REPAIRS AND OPERATING EXPENSES, NEW YORK STATE CANALS, FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1890.

By Superintendent of Public Works	$8,443 29
By assistant superintendents of public works	269,171 49
By superintendents of canal repairs	461,697 41
By salaries of superintendents of canal repairs	28,057 26
By clerk hire and office expenses of Superintendent of Public Works and assistant superintendents of public works	15,644 01
By salaries and traveling expenses of Superintendent of Public Works and assistant superintendents of public works	17,043 37
Total ordinary repairs	$800,056 83
Collectors of statistics and inspectors	26,878 01
	$826,934 84

The detailed report of the expenditures for ordinary repairs and operating expenses will be found in subsequent pages of this report.

The increased expenditure of this year over that of last year arises from the deficiency caused by the two-dollar-a-day law; from extraordinary work which had to be done outside of the ordinary canal repairs, notably at Moyer creek, the State dam at Troy and the Cohoes dam, and also from the increased pay and additional help of lock-tenders on the Champlain canal, required on account of the excess of work caused by the large transportation of ice.

TONNAGE.

There has been a slight decrease in the amount of grain carried by the canal during the season, and this decrease in a large measure caused the deficiency in the tonnage this year, as compared with the tonnage of 1889. The canals were opened on April twenty-eighth, and the grain which was loaded at Buffalo at that time, did not begin to arrive in New York until about May fifteenth. Yet of the total amount of grain received in the city of New York by all the various routes of transportation from May first to December first, the canals carried $38\frac{72}{100}$ per cent. The total amount of grain received in New York during that period was 77,702,156 bushels, and the amount delivered in that city by canal was 30,082,900 bushels, the balance, viz., 47,619,256 bushels being the total amount delivered by the New York Central and Hudson River railroad, the Erie, the Pensylvania Central, the Delaware, Lackawanna and Western, the West Shore, the Lehigh Valley, the Baltimore and Ohio, and other less important routes.

The total tonnage of the canals for the season just closed is 5,246,102 tons, which is 124,267 tons less than that of 1889, and 303,154 tons greater than that of 1888.

The following is the total tonnage of the canals for each of the last three years:

	Tons.
1888	4,942,948
1889	5,370,369
1890	5,246,102

Of the total amount of tonnage transported, the

	Tons.
Erie canal, carried	3,303,929
Champlain canal, carried	1,520,757
Oswego canal, carried	225,936
Cayuga and Seneca canal, carried	63,419
Black River canal, carried	132,061
Total	5,246,102

Of this amount, 3,836,004 tons were eastward-bound freight, and 1,410,098 tons were westward-bound; and 3,110,490 tons of this freight were through freight, and 2,135,612 tons were classed as way freight.

The tonnage of the canals for the past season was composed of the following described classes of articles:

	Tons.
Product of the forest	1,397,862
Agriculture	1,201,916
Manufacture	139,310
Merchandise	769,672
Other articles	1,737,342
Total	5,246,102

The following is the shipments of grain from Buffalo during the past two seasons:

	Bushels, 1889.	Bushels, 1890.
Wheat	15,318,376	10,984,367
Rye	1,220,294	603,744
Corn	20,697,366	21,372,670
Barley	682,499	2,441,105
Barley malt	213,054	244,241
Oats	3,823,463	2,825,093
Peas and beans	30,772	....
Totals	41,985,824	38,401,220
	Barrels.	Barrels.
Flour	8,454	1,805
	Pounds.	Pounds.
Flaxseed	52,632,633	60,771,274

Until within the past few years no improvements had been made in the machinery or structures of the canals of this State. The same depth of water, the same system of locks and the same capacity of boats had existed for over a quarter of a century, and most of the boats are being towed by horses, just as they were fifty years ago.

Contrast this with the equipment of those railroads which compete with the canals for the grain traffic of the west. Every modern appliance that could be conceived has been adopted by them, to enable them to carry freight at a less rate and in a shorter time. They own their own elevators at the termini of their routes. They have their own vessels plying upon the lakes to bring this traffic to their respective roads. They have constructed cars especially adapted for their trade, and have supplied them with air-brakes. Yet, notwithstanding these facts, the Erie canal continues to regulate the price of carrying grain from the west to the seaboard, and as the above figures illustrate, the canal carries a fair share of the grain going to New York city. As the improvements on the Erie canal progress it will be noticed that the cost of moving grain decreases more or less proportionately. The following is the average price paid for carrying wheat from Buffalo to New York city by canal during each of the past four years:

	Per bushel.
1887	\$0.04$\frac{6}{10}$
1888	.03$\frac{4}{10}$
1889	.04$\frac{8}{10}$
1890	.03$\frac{87}{100}$

In order to illustrate the exertions that are being made by the competing lines of railways to control their trade, I herewith quote a portion of the report of John King, president of the Erie railway, to the bond and shareholders of that company, made September 30, 1890. Mr. King says: "It will be noted, that in common with nearly all the leading lines in the United States, your company made a very large increase in the gross earnings, *but the net results were much less satisfactory.* These results have been caused by various circumstances, the leading one being the very low rates for the transportation of traffic, especially through freight.

"Your company was obliged to adopt the same rates upon through business as established by competing lines, although these rates were reduced to an unremunerative point and much lower than was necessary in view of the immense amount of freight offered.

"Some of the leading western lines insisted upon very low rates east bound in order to attract the business to the rail lines which otherwise would go by lake.

"The results expected by these companies were not realized. More business than usual went by the lake, and it was shown to be an absurdity to attempt to force even the lower classes of freight, by a reduction of rates, from the lakes and put it upon the rail lines, as long as navigation is open.

"This effort has been made repeatedly in years past, but uniformly without success.

"In addition to these difficulties the competition in service has increased the cost of operation largely in excess of the advantages gained. Not many years ago the average speed of freight trains rarely exceeded ten miles per hour, now upon your road they run at the average rate of twenty-five miles per hour. At that time the engine hauling freight trains weighed thirty tons, now they weigh sixty tons. The rails in the track weighed fifty-six pounds to the yard, now your company puts in steel rails weighing eighty pounds. There were laid upon the main line of the Erie proper last year, 18,497 tons of steel rails, of which 13,883 were of eighty-pound pattern and steel rails of a lighter description were taken out. These in turn were placed in the branch roads, until finally the point is reached when all the main tracks, the branch roads, and nearly all the sidings are laid with steel."

And on page 10, same report, in speaking of repairs and other purchases, Mr. King says: "The increased business necessitated the purchase of 500 drop-bottom cars, at a cost of $217,933.20, in addition to 1,000 cars provided for by the Wyoming Car Trust for the coal traffic of the Pennsylvania Coal Company. Also, 130 elevator grain-line box cars, of a capacity of 1,000 bushels of grain each, through the Erie Elevator Company, making a total equipment of 500 of these cars."

Here we have the statement made by the president of one of the principal railroads in this country "that a combination of railroads exists for the purpose of 'forcing' the freight from the lakes, and thus diverting it from the Erie canal and to their own companies roads" This combination has reduced the rate to such a low figure that they have carried freight at a loss; and this was done to force freight to go by rail, instead of by lake and canal. Had they been successful there would have been but little east-bound freight for the canal to carry. They realize the fact that if the competition of the Erie canal can be destroyed or even removed, if only for a time, boatmen upon the canal would become disheartened and the boating properties would be allowed to decay; then this combination of railways could restore the oppressive rates upon the various lines, and, as they are all in one pool, no competition would exist. This enormous combination, which counts its wealth by the hundreds of millions of dollars, and which can afford to carry freight at a loss in order to force out competition, has it within its power to inflict serious injury to the canals if their policy is not met and promptly checked. The Legislature can check it by a more liberal policy toward the canals. In no more effective manner can the policy of crippling the canals be thwarted than by thoroughly equipping the canals and putting them in the best possible condition, not only to maintain the commerce which has in the past naturally been transported over them, but to attract additional traffic to them hereafter. There is, however, a prevailing opinion that the time is not far distant when electricity will be used upon the canals as the propelling power for boats. In this opinion I fully concur, but as the science of electricity, as developed for purposes of motor power, is of but recent discovery and it remains yet to be more fully developed, it is impossible to foretell what great results may in a short time be achieved by its use.

The canal, however, should be put in such condition that when the time arrives for its application electricity may be utilized for the benefit of the people. The boat register on file in this department shows that previous to opening the canal this year there were registered 5,360 boats, and during the year seventy-seven new boats have been registered, making a total of 5,437 boats.

Fuller information in regard to the tonnage of the canals will be found in the tables which accompany this report.

NAVIGATION.

Navigation has been uniformly good during the greater part of the season with a few exceptions which were caused by breaks, high water, and sunken boats. For particulars, I respectfully refer you to the reports of the assistant and the section superintendents, which will be found in subsequent pages of this report.

The past season has been a dangerous and damaging one to the canals of the State, owing to the long and severe storms which have been experienced, the utmost care having been required to prevent breaks. Too much praise can not be given to the assistant and the section superintendents and their employés for the attention they have bestowed upon their work at those times.

A cause of considerable trouble to navigation and expense to the State, is sunken boats, of which during the past year there have been a great number. At present no authority is vested in the canal officials to determine whether a boat is fit for service on the canals or not. Generally, the owners of boats in bad condition have kept them in use without sufficient repair, and the result is that such boats ultimately sink and are abandoned only to be removed at considerable expense to the State. A law should be enacted by the Legislature directing that the Superintendent of Public Works, or some suitable person appointed by him, be empowered to prevent unsafe boats from navigating the canals.

HUDSON RIVER IMPROVEMENT.

According to chapter 204 of the Laws of 1890, the sum of $30,000 was appropriated for improving the channel of the Hudson river between Troy and Priming Hook, the appropriation including the sum of $5,000 to be paid for engineering expenses. The unexpended balance remaining from the appropriation of last year was $8,000, thus making a total amount of $33,000, to be expended by this department. In accordance with that law, after due advertising, the work designated in the following statement of expenditures was done by contract:

STATEMENT *of expenditures by Superintendent of Public Works for* 1890, *from Hudson River Improvement Appropriation, Chapter* 204, *Laws of* 1890.

LOCATION OF WORK.	Engineer's estimates of amounts to be dredged. Cubic yds.	Amounts dredged. Cubic yds.	Price paid per cubic yd.	Total amounts paid.
New Baltimore	16,000	23,083	$0 10 9-10	$2,516 05
Cuyler and Bogart lights	18,000	17,031	10	1,703 10
Round shoals	6,000	3,712	13	482 56
Van Buren bar	12,000	11,919	17	2,026 23
Congress street bridge, Troy	8,000	8,832	25	2,208 00
Covill's folly	16,000	15,895	29 9-10	4,752 61
Removing rock at Troy (unfinished)	*2,900 †450	1,020 1,260	*5 95 † 38	5,566 00
Total cu. yds. of engineer's estimates.	79,350			
By State dredge.				
Between Troy and Albany		2,345½	....	886 42
Taking up wrecks from channel		....	....	
Total cubic yards dredged		85,097½	....	
Inspectors				3,632 08
Printing				459 50
Dykes.				
Repairing 267 feet at New Baltimore dyke				508 92
Repairing 3,628 feet at Mull's dyke				‡1,039 57
Repairing 2,960 feet at Castleton dyke				743 88
Total amount expended by Superintendent of Public Works, to December 1, 1890				$26,524 92

* Rock. † Earth. ‡ Remains unpaid on Mull's light dyke work.

While carrying out the provisions of the above law, the Superintendent of Public Works encountered considerable difficulty from the objections made by United States officers with regard to the dumping of dredged material within the pier lines established by them in March, 1890. Previous to this it was customary to deposit dredged material behind the dykes which the United States officials now claim to be within the newly-established pier lines. The result is that dredging in the Hudson will hereafter be done at an increased cost. Navigation has been uniformly good, an average depth of eleven feet of water having been maintained below Albany, and ten feet between Troy and Albany during the entire season.

In August last, a contract was made with Mr. P. H. Myers, of Albany, to remove the rock from the river channel between the railroad bridge and the State dam at Troy, and on the completion of this work there will be a channel eighty feet wide and six feet deep between those points, thereby doing away with all danger to navigation in that locality.

LENGTHENING LOCKS.

The whole number of locks lengthened on New York State canals, are as follows: Erie canal, locks Nos. 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 44, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 60, 61, 62, 63, 64, 65, 66, 72. Oswego canal, locks Nos. 3, 5, 6, 7, 10 and 11; guard locks Nos. 1, 3 and 4. Black River canal locks rebuilt are as follows: Locks Nos. 8, 12, 29, 41, 42, 43, 48 and 60. Cayuga and Seneca canal, lock No. 8, rebuilt.

The locks under contract to be lengthened this winter are as follows: Erie canal, locks Nos. 40, 41, 42, 43, and 46. Oswego canal, locks Nos. 8 and 12. Black River canal part of lock No. 1 to be rebuilt.

When the work now under contract is completed, the canal may be used next season for double headers without uncoupling, over the following distances:

ERIE CANAL.

	Miles.
Upper Mohawk aqueduct to Little Falls, locks Nos. 22 to 36,	56.93
From Little Falls to Newark, locks Nos. 40 to 56, inclusive,	137.296
Newark to Lockport, locks Nos. 60 to 66, inclusive......	97.42
Lockport to Buffalo, lock No. 71 to city................	32.00
Total completed................................	323.646
To be completed................................	28.354
Total length of Erie canal........................	352.000

OSWEGO CANAL.

	Miles.
Completed double locks Nos. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	32.00
Locks Nos. 1, 2 and 13 to 18, single locks, about	6.00
Total	38.00

Locks on the Black River canal that have been rebuilt, Nos. 1, 8, 12, 29, 41, 42, 43, 48 and 60.

This leaves about twenty-eight miles of the Erie canal, and about six miles of the Oswego canal upon which there are single tiers of locks to interfere with the navigation of double headers.

In order to facilitate State commerce and increase the lockage capacity of the Erie and Oswego canals, and to improve the Erie, Oswego, Black River, Cayuga and Seneca and Champlain canals, and to complete the bottoming out of the Albany basin of the Erie canal, the Legislature, under chapter 168 of the Laws of 1890, empowered the Superintendent of Public Works to lengthen one tier of six or more locks on the Erie canal and two on the Oswego canal, the locks to be designated by the State Engineer and Surveyor and the Superintendent of Public Works. Also to improve the Erie and Oswego canals by bottoming them out to the standard depth of seven feet at such points as would be deemed most important; also to make such improvements on the Black River canal, the Champlain canal and the Cayuga and Seneca canal as the interests of commerce most require and to complete the bottoming out of the Albany basin of the Erie canal to its legal depth of seven feet of water at low tide.

This work was to be done by contract after being advertised in at least two daily papers in each city, and two weekly papers in each county along the line of said canals and in the cities of New York and Brooklyn, twice in each week for three consecutive weeks preceding the letting of such contracts.

The sum of $500,000 was appropriated to carry on the work, to be applied as follows:

The sum of $285,000, or so much thereof as may be necessary, to be applied to the improvement of the Erie canal, and to be distributed as follows: One hundred and eighty-five thousand dollars, or so much thereof as may be necessary, for lengthening six or more locks and providing necessary machinery for the same; $100,000 for deepening or bottoming out Erie canal, and the balance, if any, of the $185,000 appropriated for lengthening Erie canal locks, to be applied to the deepening or bottoming out of said Erie canal in addition to the sum specially appropriated for that purpose.

The sum of $70,000 to be applied to the improvement of the Oswego canal, first for the lengthening of two or more locks and necessary machinery for the same, and second, for the deepening or bottoming out of said canal.

The sum of $110,000 to be applied to the improvement of the Champlain canal.

The sum of $10,000 to be applied to the improvement of the Cayuga and Seneca canal.

The sum of $10,000 to be applied to the improvement of the Black River canal.

The sum of $15,000, or so much thereof as may be necessary, to be applied to complete the bottoming out of the Albany basin of the Erie canal.

Notices to contractors were published and bids were received, July 8, 1890, for the work above mentioned from the following persons for the amounts set opposite to their names:

Lengthening locks Nos. 40, 41, 42, 43 *and* 46, *Erie canal, Nos.* 8 *and* 12, *Oswego canal, and rebuilding part of lock No.* 1, *Black River canal, July* 8, 1890, *chap.* 168, *Laws of* 1890.

NAME.	Residence.	ERIE CANAL.					OSWEGO CANAL.		BLACK RIVER CANAL.
		Lock 40.	Lock 41.	Lock 42.	Lock 43.	Lock 46.	Lock 8.	Lock 12.	Lock 1.
Willis S. Nelson	Fulton	....	....	....	....	$33,072 75	$36,664 20	$44,808 70	....
William Patrick	Phœnix	....	....	$33,739 25	$31,412 00	....	31,731 70	37,936 70	....
Frank A. Barrett	Boonville	....	....	....	....	....	....	....	$8,943 50
J. W. Berry & Co.	Utica	....	....	....	....	22,979 75	....	....	9,214 00
Costello Nagle & Co.	Elmira	$40,464 37	$37,997 72	....	38,066 22	27,883 33	....	....	....
Hughes Bros.	Syracuse	31,486 75	29,422 05	32,884 55	31,562 05	22,390 25	34,893 45	37,245 70	7,881 00
Casey, Murray & Co.	Elmira	33,372 25	32,212 00	32,415 80	31,377 50	....	....	....	....
P. J. Brummelkamp	Syracuse	....	....	37,772 50	....	24,396 75	....	....	....
Flood & Sherrill	Sandy Hill	35,211 25	32,521 50	35,294 00	34,064 00	....	....	....	....
F. A. Barrett and P. Phillips	Boonville	....	....	....	....	23,030 75	....	....	....
John F. Thomas	Ilion	34,248 30	32,725 80	33,301 30	33,410 80	....	....	....	....
Shanahan Bros. & Co.	Tribes Hill	33,424 25	30,596 00	Informal.	....	....	....	....	....
G. V. Rapp and A. E. Shafer	Canajoharie	....	....	39,252 25	37,083 75	....	....	....	....

For lengthening of Erie locks Nos. 40, 41, 42, 43 *and* 46.

Lock No. 40, Hughes Bros., Syracuse	$31,486 75
Lock No. 41, Hughes Bros., Syracuse	29,422 05
Lock No. 42, Casey, Murray & Co., Elmira	32,415 80
Lock No. 43, Casey, Murray & Co., Elmira	31,377 50
Lock No. 46, Hughes Bros., Syracuse	22,390 25

For lengthening Oswego locks Nos. 8 *and* 12.

Lock No. 8, Mr. Patrick, Phœnix	$31,731 70
Lock No. 12, Hughes Bros., Syracuse	37,245 70

Rebuilding part of lock No. 1, *Black River canal.*

Hughes Bros., Syracuse	$7,881 00

For improvement of Champlain canal, October 6, 1890.

(Chapter 168, Laws 1890.)

NAME.	Residence.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
J. W. Whalen	Whitehall	$6,515 60	....	$5,708 75	$10,144 25	....	$5,141 75
John J. Cunningham and Philip Riley	Sandy Hill	5,597 30	$29,389 00	7,031 00	12,479 25	$19,579 00	....
Flood, Sherrill & Co.	Sandy Hill	6,462 60	33,825 00	6,865 35	11,580 20	21,386 40	5,259 55
Atwell A. Parker	Waterford	6,034 94	....	6,808 15	11,906 50	22,658 50	7,577 50
Oscar F. Hilt	Greenbush	6,236 60	....	....	....	....	....
Troy Public Works Company (Limited)	Troy	5,784 60	31,209 40	6,157 50	10,255 25	19,741 25	6,242 40
Emmett Flagler	Troy	....	....	6,122 10	10,606 55	....	....
A. C. Martin	Seneca Falls	....	....	....	11,684 50	....	....
Gordon & Dardis	Fort Edward	....	....	....	10,383 25	18,021 50	6,290 25
Sheldon & Briggs	Fort Ann	....	....	....	....	....	5,408 90
Sturtevant & Poole	Sandy Hill	....	....	....	....	....	*4,888 70
Wm. L. Sherrill	Sandy Hill	....	....	....	....	....	5,444 25

* Unbalanced.

IMPROVING CHAMPLAIN CANAL.

(No. 1.)

For rebuilding culvert under Champlain canal, south of Mechanicville:

John J. Cunningham and Philip Riley, Sandy Hill $5,597 30

(No. 2.)

For improving 3,900 feet of Champlain canal, north of Railroad street lift-bridge, Mechanicville:

John J. Cunningham and Philip Riley, Sandy Hill $29,389 00

(No. 3.)

For improving 1,400 feet of Champlain canal, north of the Mechanicville waste-weir:

J. W. Whalen, Whitehall... .... $5,708 75

(No. 4.)

For improving 1,770 feet of Champlain canal, southward from Lansing's waste-weir:

J. W. Whalen, Whitehall.................... $10,144 25

(No. 5.*)

For improving 3,200 feet of Champlain canal, from Searles' waste-weir (130 feet north of bridge No. 49) southward:

Gordon & Dardis, Fort Edward $18,021 50

(No. 6.)

For improving 1,500 feet of Champlain canal north of Smith's Basin, beginning at a point 500 feet north of bridge No. 108 and running northerly:

J. W. Whalen & Co., Whitehall $5,141 75

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* Awarded to Gordon & Dardis, who refused to sign contract.

Improving Glens Falls feeder Nos. 1, 2 *and* 3; *deepening Oneida river improvement, No.* 4.

Chapter 568, Laws of 1889.

NAME.	Residence.	No. 1. 570 feet.	No. 2. 360 feet.	No. 3. Waste-weir,	No. 4. Oneida river.
Flood & Sherrill........	Sandy Hill	$7,130 50	$5,738 50	$3,637 75	....
Phillip Riley	Sandy Hill	8,746 25	6,618 00	....	....
John H. O'Connor	Glens Falls	....	6,355 25	....	....
Casey, Murray & Co ...	Elmira	9,062 85	7,320 00	5,614 75	....
Malone & McKenna ...	Troy.................	9,018 30	6,930 00	....	....
Daniel Sturtevant.....	Sandy Hill	....	....	4,251 75	....
George L. Riley........	Sandy Hill	....	....	4,102 75	....
John J. Halleck........	Syracuse	....	....	....	$9,008 00
P. J. Brummelkamp...	Syracuse	....	....	....	8,050 00
Van Wagner & Co	Syracuse	....	....	....	9,140 00

(No. 1.)

For improving 570 lineal feet of the Glens Falls feeder of Champlain canal, westward from a point 360 feet westerly from bridge No. 8:

Flood & Sherrill, Sandy Hill.................	$7,130 50

(No. 2.)

For improving 360 lineal feet of the Glens Falls feeder of Champlain canal, westward, from westerly end of bridge No. 8:

Flood & Sherrill, Sandy Hill	$5,738 50

(No. 3.)

For building waste-weir, spillway and sluiceway at combined locks Nos. 2 and 3, Glens Falls feeder:

Flood & Sherrill, Sandy Hill	$3,637 75

(No. 4.)

For improving Oneida river.

P. J. Brummelkamp, Syracuse....................	$8,050 00

(Chapter 424, Laws of 1887.)

Excavation of rock from Oak Orchard creek.

L. Harbrecht & Co., Buffalo, per cubic yard........	$2 25

Awarded to L. Harbrecht & Co.

(Chapter 318, Laws of 1888.)

Improving 450 feet of the Glens Falls feeder.

George R. Finch, Glens Falls.

Awarded to George R. Finch.

(Chapter 568, Laws of 1889.)

(No. 1.)

For machinery for locks Nos. 23, 24, 25, 26, 65 *and* 66, *Erie canal.*

N. & W. H. Wemple, Fultonville	$1,100 per lock.

(No. 2.)

For machinery for locks Nos. 53, 54, 55, 56, 60, 61 *and* 62, *Erie canal.*

N. & W. H. Wemple, Fultonville	$1,100 per lock.

Awarded to N. & W. H. Wemple.

(Chapter 81, Laws of 1890.)

Building stone culvert at South James street, Rome, over the old abandoned Erie canal.

Charles Langtry, Utica	$1,204 90
George H. Parker and Edward Coughlin, Oneida	1,364 60
P. J. McCaffery, Oneida	1,261 96
F. A. Barrett, Boonville	1,422 61
John White, Utica	1,386 40

Awarded to Charles Langtry.

(Chapter 177, Laws of 1890.)

Iron lift-bridge and substructure over Erie canal, from Caledonia avenue to West Main street, in the city of Rochester.

SUBSTRUCTURE.

Weider & McMahon, Rochester	$3,226 50
George Chambers, Rochester	2,703 00
James Robinson, Rochester	3,347 50

Awarded to George Chambers.

SUPERSTRUCTURE.

W. H. Shepard & Sons, Havana, N. Y	$10,190 00
Groton Bridge and Manufacturing Co., Groton, N. Y.	12,820 00

Awarded to W. H. Shepard & Sons.

(Chapters 333, Laws of 1890, and 149, Laws of 1889.)

Building iron bridge and substructure over Erie canal at Main street, Fultonville.

SUBSTRUCTURE.

Joseph P. Monty, Sandy Hill	$4,037 25
Flood & Sherrill, Sandy Hill	3,701 75
Shanahan Bros., Tribes Hill	3,760 25
Isaac Thomas, Fultonville	3,532 25
P. J. McCaffery, Utica	4,955 25
Hughes Bros., Syracuse	4,298 75

Awarded to Isaac Thomas.

SUPERSTRUCTURE.

Rochester Bridge Works, Rochester, N. Y	$4,359 00
Groton Bridge and Manufacturing Co., Groton, N. Y.	5,468 00
W. H. Shepard & Sons, Havana, N. Y	5,410 00
King Iron Bridge Co., Cleveland, O	4,600 00

Awarded to Rochester Bridge Works.

(Chapter 274, Laws of 1890.)

Dredging 89,324 *cubic yards of material from Black Rock harbor, Buffalo.*

Louis P. & James A. Smith, Cleveland, O., per cubic yard	18 cents.
Hingston & Wood, Buffalo, N. Y., per cubic yard	9¾ cents.
R. J. Cram, Detroit, Mich., per cubic yard	17 cents.

Awarded to Hingston & Wood.

Dredging 102,339 *cubic yards of earth and excavating* 4,666 *cubic yards of rock from Erie basin, Buffalo.*

Louis P. & James A. Smith, Cleveland, O., per cubic yard for earth	15 cents.
Louis P. & James A. Smith, Cleveland, O., per cubic yard for rock	$6 00
Hingston & Wood, Buffalo, N. Y., per cubic yard for earth	15 cents.
Hingston & Wood, Buffalo, N. Y., per cubic yard for rock	$2 74
R. J. Cram, Detroit, Mich., per cubic yard for earth,	14 cents.
R. J. Cram, Detroit, Mich., per cubic yard for rock,	$7 00

Awarded to Hingston & Wood.

(Chapter 486, Laws of 1889.)

Constructing fish-ways at Mechanicville and Northumberland dams.

W. H. Rogers, Troy, N. Y	$4,250 00

Awarded to W. H. Rogers.

(Chapter 204, Laws of 1890.)

HUDSON RIVER IMPROVEMENT.

Dredging 18,000 *cubic yards of material on crossover between Cuyler and Bogart lights.*

P. J. Brummelkamp, Syracuse, per cubic yard	10 cents.
P. W. Myers, Albany, per cubic yard	11$\frac{3}{4}$ cents.
E. M. Payn, Albany, per cubic yard	11$\frac{5}{8}$ cents.

Awarded to P. J. Brummelkamp.

Dredging 16,000 *cubic yards of material at New Baltimore light.*

P. J. Brummelkamp, Syracuse, per cubic yard	11$\frac{1}{2}$ cents.
E. M. Payn, Albany, per cubic yard	10$\frac{9}{10}$ cents.
P. W. Myers, Albany, per cubic yard	Informal.

Awarded to E. M. Payn.

Dredging 6,000 *cubic yards of material at Round Shoals.*

E. M. Payn, Albany, per cubic yard..............	29$\frac{9}{10}$	cents.
P. J. Brummelkamp, Syracuse, per cubic yard......	13	cents.
P. W. Myers, Albany, per cubic yard..............	16$\frac{3}{4}$	cents.

Awarded to P. J. Brummelkamp.

Dredging 12,000 *cubic yards of material at Van Buren bar.*

E. M. Payn, Albany, per cubic yard..............	31$\frac{8}{9}$	cents.
P. J. Brummelkamp, Syracuse, per cubic yard......	20	cents.
P. W. Myers, Albany, per cubic yard..............	17	cents.

Awarded to P. W. Myers.

Dredging 15,000 *cubic yards of material at Mull's light.*

P. W. Myers, Albany, per cubic yard....	8$\frac{3}{4}$	cents.
E. M. Payn, Albany, per cubic yard..............	9$\frac{9}{10}$	cents.
P. J. Brummelkamp, Syracuse, per cubic yard....	15	cents.

Awarded to P. W. Myers and afterwards canceled.

Dredging 16,000 *cubic yards of material at Coville's Folly.*

P. W. Myers, Albany, per cubic yard..............	30	cents.
E. M. Payne, Albany, per cubic yard..............	29$\frac{9}{10}$	cents.
P. J. Brummelkamp, Syracuse, per cubic yard.....	72	cents.

Awarded to P. W. Myers.

Dredging 2,000 *cubic yards of rock and* 450 *cubic yards of earth from the channel of the Hudson river, between the State dam and the Rensselaer and Saratoga railroad bridge, Troy.*

P. W. Myers, Albany, earth per cubic yard	$0 38
P. W. Myers, Albany, rock per cubic yard	5 95
P. J. Brummelkamp, Syracuse, earth per cubic yard,	40
P. J. Brummelkamp, Syracuse, rock per cubic yard,	6 25

Awarded to P. W. Myers.

(Chapter 295, Laws of 1890.)

Dredging 18,000 *cubic yards of earth and* 150 *cubic yards of rock from the channel of Rondout creek.*

E. M. Payn, Albany, earth per cubic yard	$0 19$\frac{9}{10}$
E. M. Payn, Albany, rock per cubic yard	12 00
P. W. Myers, Albany, earth per cubic yard	15
P. W. Myers, Albany, rock per cubic yard	9 00

Awarded to P. W. Myers.

(Chapter 436, Laws of 1890.)

For extending the jetties of Shinnecock canal and dredging the canal.

Morris & Cummings..........................	Informal.
F. H. Vinson, New York city	$19,268 00
P. J. Brummelkamp, Syracuse	16,967 10

Awarded to P. J. Brummelkamp.

(Chapter 295, Laws of 1890.)

For furnishing timber for Bird Island pier.

	Board measure.
34,704 feet white oak timber at	$25 00 per M
288,160 feet white pine timber at	24 00 per M
460,880 feet hemlock timber at	10 25 per M
76,297 feet surface pine plank at..................	22 50 per M

Awarded to Jackson Lumber Co.

(Chapter 168, Laws of 1890.)

Building superstructure of wrought-iron bridge at first bridge east of lock No. 42, *Erie canal.*

Rochester Bridge and Iron Co., Rochester.........	$2,163 00
Groton Bridge Co., Groton.......................	2,070 00
Hilton Bridge Co., Albany	2,200 00

Awarded to Groton Bridge Co.

(Chapter 167, Laws of 1890.)

Dredging 50,000 *cubic yards of material from the outlet of Chautauqua lake.*

Augustus P. Wright, Portland, Me., per cubic yard..	18 cents.

Awarded to Augustus P. Wright.

(Chapter 168, Laws of 1890.)

Dredging 40,000 *cubic yards of material from the Albany basin and removing piles from abandoned dry dock.*

P. W. Myers, Albany, per cubic yard		$0 12
P. W. Myers, Albany, for removing piles		250 00
P. J. Brummelkamp, Syracuse, per cubic yard		20
P. J. Brummelkamp, Syracuse, for removing piles..	Inf.	200 00
E. M. Payn, Albany, per cubic yard................		$12\frac{8}{9}$
E. M. Payn, Albany, for removing piles............		150 00

Awarded to P. W. Myers.

RECOMMENDATIONS FOR IMPROVEMENT.

The Superintendent of Public Works would recommend that an appropriation be made to repair the two Mohawk aqueducts and also the Schoharie Creek aqueduct, as they are at present in a dangerous condition. A careful examination of them recently made by the State Engineer and myself, discovered the fact that the trunk and the trusses of each aqueduct were in a decayed state, and were liable to give way at any time. If such a disaster should unhappily occur during the season of navigation, a serious loss to traffic on the canal would ensue, for the reason that a considerable length of time would be required in which to properly repair those structures.

OAK ORCHARD CREEK IMPROVEMENT.

According to chapter 424 of the Laws of 1887, the sum of $25,000 was appropriated to deepen and improve Oak Orchard creek, and by chapter 476 of the Laws of 1889, the unexpended balance remaining from the appropriation of 1887, in addition to the sum of $3,000 was appropriated to continue the improvement. The amount of the latter appropriation is now about expended, and there still remain 2,600 yards more or less of rock to be excavated to complete the improvement. Until this is done, no great benefit can be derived from the amount of work thus far accomplished.

CHAMPLAIN CANAL.

The Champlain canal is sixty-six miles long, of which distance twenty-five miles, including Wood creek, has been improved, leaving more than forty-one miles of canal unimproved. The improvements consist in deepening and widening the prism of the canal in order to secure the standard depth of six feet and a uniform width of forty-four feet at bottom.

The need of continuing this improvement has been clearly demonstrated during the past season by the difficulty met with at all times in operating the canal, on account of the increased traffic caused by the vast shipments of ice. If it were not for the advantages resulting from previous improvements, it would have been impossible to manage the enormous quantity of boats in daily use upon this canal. The number of these boats may be estimated from the following table as taken from the record of lockages at the Fort Edward lock (which is a single lock), for the months of June, July, August, September and October of the present year :

June	2,597
July	2,648
August	2,814
September	2,188
October	2,099

The improvements upon the Champlain canal have not progressed as fast as its rapidly increasing commerce would seem to demand. During the season just closed, 1,520,757 tons of freight were transported upon this canal, of which amount 467,537 tons were ice that was harvested on Lake Champlain and shipped from Whitehall to the city of New York.

In 1889 the tonnage of the Champlain canal was 1,330,231 tons, and in 1888 it was 1,177,587 tons.

The great quantity of ice passing through the Champlain canal during the past season required every facility for rapid transit on account of its enormous shrinkage while being conveyed to its destination, but when it is considered that the locks upon this canal are all single locks, and that an accident or an obstruction at any of them causes a total suspension to navigation at such point until the obstruction is removed, the importance of doubling these locks is apparent.

Ice, which was formerly a luxury, is now one of the necessaries of life, and each year it becomes indispensable. In no place is the want of it more severely felt than in the crowded cities of New York and Brooklyn, and the towns along the Hudson river. A boat load of ice can be brought from Lake Champlain to any of the wharves in the city of New York or Brooklyn in about three and one-half days, and the cost of carrying the same per ton is but a small amount more than the charge for carting it one mile in either of the above cities. With the Champlain canal improved, the charge could be reduced one-half. While it is true that the people of these cities are not often obliged to resort to Lake Champlain for their supply of ice, they were compelled to do so last year and may be obliged to resort to that source at any future time. This fact coupled with the knowledge of the enormous amount of iron ore which is produced in northern New York and which has formidable competition with other States as well as with foreign countries, together with the fact that the Champlain canal is the principal route through which this vast commerce must be moved, demonstrates the importance of deepening this canal and increasing its lockage capacity. These facts can not be disregarded, and the improvements should not be delayed.

BLACK RIVER CANAL.

The special attention of the Legislature is called to the condition of the Black River canal, principally to some of the locks between Rome and Boonville. Most of these locks are in a leaky state, the stone is crumbling and the walls are narrowing up to such a degree that boats can scarcely pass through. If these locks are not improved within a short time navigation on this canal will have to be suspended.

I herewith respectfully submit the reports of the assistant and the section superintendents, and take this opportunity of thanking them and the attachés of my office for the efficient manner in which they have discharged their respective duties.

EDWARD HANNAN,
Superintendent of Public Works.

SUMMARY *of expenditures, ordinary repairs, from October* 1, 1889, *to December* 16, 1889, *under James Shanahan, Superintendent of Public Works.*

CANALS.	Sections.	By Superintendent of Public Works.	By Assistant Superintendents of Public Works.	By Superintendents of Canal Repairs.	Each section.	Total.
Erie	1	....	$117 84	$21,104 31	$21,222 15	
Erie	2	....	590 44	10,241 45	10,831 89	
Erie	3	....	531 15	9,192 25	9,723 40	
Erie	4	....	4 00	10,521 90	10,525 90	
Erie	5	....	1,807 68	4,041 28	5,848 96	
Erie	6	....	3,003 20	5,118 12	8,121 32	
Erie	7	....	1,637 78	3,261 00	4,898 78	
Erie	8	....	260 84	10,058 25	10,319 09	
Erie	9	....	627 05	7,823 08	8,450 13	
Erie	10	....	665 85	8,059 50	8,725 35	
Erie	11	....	1,596 38	17,094 51	18,690 89	$117,357 86
Champlain	1	....	....	$7,114 84	$7,114 84	
Champlain	2	....	....	9,801 25	9,801 25	
Champlain	3	....	....	5,677 20	5,677 20	22,593 29
Oswego	1	....	$163 17	$3,108 55	$3.271 72	
Oswego	2	....	913 75	7,875 65	8,789 40	12,061 12
Cayuga and Seneca	......	....	$231 95	$2,588 50	$2,820 45	2,820 45
Black River	1	....	$920 86	$9,764 93	$10,685 79	
Black River	2	....	472 75	4,191 54	4,664 29	15,350 08
Chenango	......	....	$318 29	....	$318 29	318 29
Division expenses:						
Eastern		....	$2,631 36	....	....	
Middle		....	1,251 95	....	....	
Western		....	1,614 85	....	....	5,498 16
Erie general		$469 58	....	....	....	469 58
Champlain general		210 00	....	....	....	210 00
						$176,678 83

SUMMARY *of expenditures, ordinary repairs, from December* 16, 1889, *to September* 30, 1890, *under Edward Hannan, Superintendent of Public Works.*

CANALS.	Sections.	By Superintendent of Public Works.	By Assistant Superintendents of Public Works.	By Superintendents of Canal Repairs.	Salaries of Superintendents of Canal Repairs.	Total each section.	Total each canal.	Total.
Erie	1	....	$9,620 06	$38,432 85	$1,500 00	$49,552 91		
Erie	2	....	5,354 12	16,352 87	1,407 26	23,114 25		
Erie	3	....	11,706 13	14,998 44	1,500 00	28,204 57		
Erie	4	....	10,723 68	18,397 56	1,500 00	30,621 24		
Erie	5	....	18,643 28	9,693 36	1,500 00	29,836 64		
Erie	6	....	6,601 81	11,131 59	1,500 00	19,233 40		
Erie	7	....	4,246 96	5,574 46	1,500 00	11,321 42		
Erie	8	....	5,479 61	20,671 80	1,500 00	27,651 41		
Erie	9	....	8,551 64	17,373 39	1,500 00	27,425 03		
Erie	10	....	10,763 73	22,575 96	1,750 00	35,089 69		
Erie	11	....	20,599 37	34,176 48	1,800 00	56,575 85	$338,626 41	
Champlain	1	....	$14,985 44	$15,397 43	$1,500 00	$31,882 87		
Champlain	2	....	4,314 79	18,370 77	1,500 00	24,185 56		
Champlain	3	....	5,465 61	12,741 90	1,500 00	19,707 51	75,775 94	
Oswego	1	....	$3,489 31	$6,199 10	$1,200 00	$10,888 41		
Oswego	2	....	3,148 81	9,213 31	1,500 00	13,862 12	24,750 53	
Cayuga and Seneca	......	....	$2,785 02	$6,391 53	$1,200 00	$10,376 55	10,376 55	
Black River	1	....	$10,068 37	$18,929 39	$1,500 00	$30,497 76		
Black River	2	....	3,629 73	8,437 11	1,200 00	13,266 84	43,764 60	
Chenango	......	....	$901 73	....	....	$901 73	901 73	
Division expenses:								
Eastern		....	$72,306 29	....	....	$72,306 29		
Middle		....	4,312 63	....	....	4,312 63		
Western		....	12,112 23	....	....	12,112 23	88,731 15	

Summary of expenditures, ordinary repairs, etc. — (Concluded).

CANALS.	By Superintendent of Public Works.	By Assistant Superintendents of Public Works.	By Superintendents of Canal Repairs.	Salaries of Superintendents of Canal Repairs.	Total each section.	Total each canal.	Total.
General expenses:							
Erie	$6,315 31	....	....	....	$6,315 31		
Champlain	1,448 40	....	....	....	1,448 40	$7,763 71	$590,690 62
Office expenses:							
Albany	$10,040 38	....	....	....	$1,0040 38		
Eastern division	....	$2,159 42	....	....	2,159 42		
Middle division	....	2,067 28	....	....	2,067 28		
Western division	....	1,376 93	....	....	1,376 93	$15,644 01	
		Salaries.	Travel.	Total.			
James Shanahan		$1,758 06	$53 46	$1,811 52			
Edward Hannan		4,241 94	112 88	4,354 82			
Charles Zeilley		1,096 75	210 35	1,307 10			
George E. Simmons		1,903 25	530 08	2,433 33			
John Stebbins		1,125 00	172 78	1,297 78			
James H. Flanagan		1,875 00	241 69	2,116 69			
Ira Betts		145 16	12 89	158 05			
George Chambers		3,000 00	564 08	3,564 08	....	$17,043 37	32,687 38
By Superintendent Edward Hannan							$623,378 00
By Superintendent James Shanahan							176,678 83
Total							$800,056 83

STATEMENT *of expenditures for ordinary repairs and operating expenses on New York State canals, by divisions, for fiscal year ending September* 30, 1890.

CANALS.	By Superintendent of Public Works.	By Assist. Superintendents of Public Works.	By Superintendents of Canal Repairs.	Total.
Eastern Division.				
Erie	....	$38,647 42	$139,241 63	
Champlain	....	24,765 84	69,103 39	
Division expenses	....	74,937 65	....	
Office expenses	....	2,159 42	....	
Assistant superintendent's salary and expenses	....	3,740 43	....	
Salaries superintendents of canal repairs	....	....	10,657 26	
		$144,250 76	$219,002 28	$363,253 04
Middle Division.				
Erie	....	$35,940 71	$38,819 81	
Oswego	....	7,715 04	26,396 61	
Cayuga and Seneca	....	3,016 97	8,980 03	
Black river	....	15,091 71	41,322 97	
Chenango	....	1,220 02	....	
Division expenses	....	5,564 58	....	
Office expenses	....	2,067 28	....	
Assistant superintendent's salary and expenses	....	3,414 47	....	
Salaries superintendents of canal repairs	....	....	11,100 00	
		$74,030 78	$126,619 42	200,650 20
Western Division.				
Erie	....	$48,544 47	$137,832 97	
Division expenses	....	13,727 08	....	
Office expenses	....	1,376 93	....	
Assistant superintendent's salary and expenses	....	3,722 13	....	
Salaries superintendents of canal repairs	....	....	6,300 00	
		$67,370 61	$144,132 97	211,503 58
General Expenses.				
Erie	$6,784 89	....	....	
Champlain	1,658 40	....	....	
Albany office	10,040 38	....	....	
Superintendent of Public Works, salary and expenses	6,166 34	....	....	24,650 01
Total				$800,056 83

ALBANY OFFICE.

October 1, 1889, *to October* 1, 1890.

Salaries and clerk hire	$7,542 24
Postage stamps and box rent	231 47
Telegraphing	266 42
Telephone service	87 40
Stationery	353 05
Printing	1,419 05
Typewriter	95 00
Miscellaneous	45 75
Total	$10,040 38

ERIE CANAL — GENERAL.

Improving Moyer creek	$1,632 00
Constructing Frankfort bridge	950 00
Special agents	3,822 06
Repairs on Glascow street bridge, Clyde	65 48
Recording	60 65
Rental Tribes Hill telephone	44 70
Miscellaneous	210 00
Total	$6,784 89

CHAMPLAIN CANAL — GENERAL.

Labor and material	$1,448 40
Harbor master	210 00
	$1,658 40

Erie canal	$6,784 89
Champlain canal	1,658 40
Total	$8,443 29

STATEMENT *of salaries paid to superintendents of canal repairs during the fiscal year ending September* 30, 1890.

ERIE CANAL.

Sec. 1.	T. I. Hardin	$1,500 00
2.	William Hathaway	750 00
2.	James Collins	657 26
3.	John Hughes	842 74

Sec.	3.	Martin Allen	$657 26	
	4.	John F. Thomas	842 74	
	4.	Henry M. Wood	657 26	
	5.	Charles Graham	842 74	
	5.	John W. Manley	657 26	
	6.	Robert R. Osmond	842 74	
	6.	Daniel Bookstaver	657 26	
	7.	John D. Spaulding	842 74	
	7.	Josiah H. Hamilton	657 26	
	8.	Daniel V. Teller	1,500 00	
	9.	John S. Gunsaul	1,500 00	
	10.	H. H. Servoss	1,092 74	
	10.	Frank C. Lillis	657 26	
	11.	Charles McDonough	1,800 00	
				$16,957 26

CHAMPLAIN CANAL.

Sec.	1.	David F. Baker	$842 74	
	1.	James Dougrey, Jr	657 26	
	2.	John J. Cunningham	842 74	
	2.	John H. Ganley	657 26	
	3.	Sylvester Mahan	1,500 00	
				4,500 00

OSWEGO CANAL.

Sec.	1.	John Leahy	$674 19	
	1.	Thomas O'Brien	525 81	
	2.	L. T. Richardson	842 74	
	2.	Anthony Salladin, Jr	657 26	
				2,700 00

CAYUGA AND SENECA CANAL.

D. W. Colvin	$674 19	
John McKeon	525 81	
		1,200 00

BLACK RIVER CANAL.

Sec.	1.	Peter Phillips	$842 74	
	1.	G. Clinton Ward	657 26	
	2.	James T. Campbell	1,200 00	
				2,700 00
				$28,057 26

STATEMENT *of moneys paid into the State Treasury by the Superintendent of Public Works for the fiscal year ending September* 30, 1890.

From Charles Zeilley, assistant superintendent, for damage to lock No. 2	$2 00
From George Chambers, assistant superintendent, use of State dredge by Hingston & Woods	353 21
From P. J. McArdle, sale of old iron	1,625 46
From sale of ice permits on eastern division	1,906 66
From John S. Gunsaul, section superintendent, for raising sunken boat James Stores	45 00
From Josiah H. Hamilton, section superintendent, for damage to lock No. 52	1 00
From James Robinson, contractor, for material, etc., furnished by State shop at Rochester	72 17
From George Chambers, assistant superintendent, amount returned not used for railroad fares at Adams Basin break	55 44
From John S. Gunsaul, section superintendent, for labor and materials furnished McLean & Rockwell for lock No. 35, Erie canal	263 15
From Ira Betts, assistant superintendent, for rent of lock-house on section 8, Erie canal	96 66
From George Chambers, assistant superintendent, for use of State dredge by Franklin & Olson	100 00
From John S. Gunsaul, section superintendent, by J. G. Wagner, for removing fallen wall from canal,	44 60
From Hughes Bros., for sand	14 50
From Josiah H. Hamilton, section superintendent, for fines	3 00
From James B. McKee, section superintendent, for damage to Lawrence street bridge	25 00
	$4,607 85
To amount reported in last annual report	1,960 60
Total	$6,568 45

STATEMENT *of payments and drafts made by the Superintendent of Public Works, under legislative acts, designated in the following list, for the purposes therein stated, from December* 1, 1889 *to December* 15, 1890. *New York State canals, etc.*

(Chapter 476, Laws 1889.)	
Improving Oak Orchard creek	$12,217 01
(Chapter 126, Laws 1888.)	
Constructing bridge at Ship street, Cohoes	1,902 57
(Chapter 434, Laws 1888.)	
Improving Peconic river	1,340 36
(Chapter 167, Laws 1890.)	
Deepening outlet Chautauqua lake	2,855 32
(Chapter 204, Laws 1889.)	
Improving harbor Canandaigua lake	14,973 16
(Chapter 348, Laws 1888.)	
Constructing culverts at Tonawanda	878 91
(Chapter 416, Laws 1888.)	
Lengthening Erie and Oswego locks, improving Champlain and Black river canals, dredging Albany basin, etc.	15,030 73
(Chapter 32, Laws 1889.)	
Constructing vertical wall at Ilion	10,273 16
(Chapter 241, Laws 1889.)	
Rebuilding wall, Oswego canal and river	4,978 93
(Chapter 122, Laws 1889.)	
Improving Black Rock harbor	22,303 56
(Chapter 274, Laws 1889.)	
Reservoir at Forestport	29,915 80

(Chapter 318, Laws 1888.)	
Improving Glens Falls feeder	$9,961 16
(Chapter 278, Laws 1889.)	
Building mole at New Baltimore	456 00
(Chapter 213, Laws 1889.)	
Constructing wall at Utica	2,671 05
(Chapter 55, Laws 1889.)	
Constructing wall at Whitehall	21,214 71
(Chapter 149, Laws 1889.)	
Main street bridge, Fultonville	1,918 23
(Chapter 84, Laws 1889.)	
Prospect street bridge, Lockport	3,624 69
(Chapter 570, Laws 1889.)	
Improving Lower Black Rock harbor	9,270 08
(Chapter 240, Laws 1889.)	
Canal ditches	5,192 94
(Chapter 568, Laws 1889.)	
Lengthening Erie and Oswego canal locks, improving Champlain, Black river, Cayuga and Seneca, and Chemung canals, dredging Albany basin and deepening Erie canal	482,663 86
(Chapter 436, Laws 1889.)	
Repairing highway at Castorland	3,162 06
(Chapter 85, Laws 1889.)	
Constructing vertical wall at Schenectady	17,868 61
(Chapter 565, Laws 1889.)	
Protecting highway on Genesee river	5,086 73

(Chapter 570, Laws 1889.)	
Repairing roads and bridges, Oneida Lake canal...	$1,190 55
(Chapter 352, Laws 1889.)	
Improving channel, Fox creek	4,333 40
(Chapter 477, Laws 1889.)	
Machinery for lift-bridge at Brockport............	2,100 78
(Chapter 228, Laws 1889.)	
Constructing culvert, Adams' Basin...............	4,571 13
(Chapter 570, Laws 1889.)	
Changing machinery in lift-bridge at Clyde........	1,347 29
(Chapter 28, Laws 1889.)	
Cleaning out State ditch in town of Murray........	296 95
(Chapter 274, Laws 1890.)	
Dredging Black Rock harbor and Erie basin, Buffalo,	28,702 13
(Chapter 168, Laws 1890.)	
Lengthening Erie and Oswego canal locks, improving Champlain and Black River canals and dredging Albany basin, etc.........................	64,239 70
(Chapter 436, Laws 1890.)	
Improving channel between Shinnecock and Peconic bays	1,626 64
(Chapter 251, Laws 1890.)	
Repairing highway between Lowville and Beach's bridge	2,499 31
(Chapter 81, Laws 1890.)	
Constructing culvert, abandoned Erie canal at Rome,	790 00
(Chapter 295, Laws 1890.)	
Repairing State road between Forestport and Woodhull.	993 25

(Chapter 333, Laws 1890.)	
Bridge at Fultonville	$3,306 50
(Chapter 177, Laws 1890.)	
West Main street bridge, Rochester	212 25
(Chapter 295, Laws 1890.)	
Repairing Bird Island pier	25,489 61
(Chapter 486, Laws 1890.)	
Fishways at Mechanicville and Northumberland,	4,346 27
(Chapter 295, Laws 1890.)	
Dredging Rondout creek	6,995 03
(Chapter 96, Laws 1890.)	
Draining abandoned Chemung canal	1,041 81
(Chapter 353, Laws 1890.)	
Cleaning out Catherine creek	700 00
	$834,542 23

EDWARD HANNAN,
Superintendent of Public Works.

EASTERN DIVISION.

REPORT OF ASSISTANT SUPERINTENDENT.

Office of Assistant Superintendent of Public Works,
Eastern Division of the Canals,
Albany, N. Y., *December* 1, 1890.

Hon. Edward Hannan, *Superintendent of Public Works:*

Sir.— In compliance with the usual custom, I submit my annual report for the fiscal year ending September 30, 1890, for the eastern division of the canals:

This division comprises that portion of the Erie canal extending from —

	Miles.
Albany to east line of Oneida county	106.24
Albany basin (one mile, Laws of 1849)	.77
Port Schuyler and West Troy side-cuts	.35
Mohawk feeder (Little Falls)	.50
Total	107.86
Champlain canal and Waterford side-cut	66.00
Pond above Troy dam	3.00
Glens Falls feeder and pond above	12.00
Total	81.00
Total Erie and Champlain canals	188.86

In the financial report of this division it will be seen that the expenditures pertaining distinctively to this division amount to $140,510.33. The greater portion of this amount has been paid out for skilled labor and necessary material at the Cohoes shops, and for the repairing and operation of the dredges, tugs and scows.

During the year just closed there has been made at the shop at Cohoes and distributed to the different sections manufactured material representing money value as follows:

Section 1, Erie canal	$22,698 33
Section 2, Erie canal	1,238 32
Section 3, Erie canal	2,390 67

Section 4, Erie canal	$480 72
Section 1, Champlain canal	6,054 83
Section 2, Champlain canal	2,325 12
Section 3, Champlain canal	1,899 66
Repairs to State dredge No. 1	89 88
Repairs to State dredge No. 2	240 30
Repairs to Mamie Ashe, State tug	178 70
Repairs to Troy dam	948 67
Repairs to Cohoes dam	567 46
Supplies to engineer's department	10 00
Waterford weigh-lock	64 42
Total	$39,187 08

Lock gates have been furnished from Cohoes State shop to the various sections as follows:

	Upper gates.	Lower gates.
Section 1, Erie canal	12	12
Section 2, Erie canal	1	4
Section 3, Erie canal	4	2
Section 1, Champlain canal	2	2
Section 2, Champlain canal	..	4
Section 2, Champlain canal, two gates for Glens Falls feeder.		
Total gates		43

SECTION 1 — ERIE CANAL.

On section 1 of the Erie canal during the past year twenty-two new lock-gates have been placed in the locks. Thirty-seven new balance-beams have been placed on lock-gates. The culvert at Thirteenth street, West Troy, on what is known as Dry river, has been effectually cleared of stone, sand and sediment, the accumulation of years. The bridges have all been painted and put in good repair. Nos. 11 and 13 have been rebuilt and approaches thereto made more easy of access, and the bridge known as Schuyler's has been almost completely reconstructed, new needle-beams having been put in and new flooring and bracing put on. The covered bridge near lock 3 has been reshingled. New lock-houses have been built at locks 10 and 16, and all others have been repaired and painted. A new pier has been built in the basin at Albany, near Lawrence street; the Lawrence street swing-bridge has been thoroughly overhauled and repaired and the piers at locks have been generally repaired and filled with stone. The tow-path from the aqueduct to Seventh street, in West Troy, has been graveled, graded and strengthened, thereby placing it in good condition. A thorough system of docking has been instituted, 97,340 feet of hemlock docking timber having been laid and secured by 45,120 feet of oak ties. As far as practicable repairs have been made to the vertical and slope walls on this section which are in need of considerable renewal. A uniform depth of seven feet of water has been maintained on this section, and the only obstruction to navigation during the season was occasioned by the sinking of a boat loaded with pig-iron in lock 11, which delay was for four hours.

SECTION 2 — ERIE CANAL.

On section 2, Erie canal, all the locks, where necessary, were repaired before the opening of navigation. Two new lock-gates were placed in lock No. 22 and lock No. 27 respectively. The aqueducts were all repaired before the opening of navigation, and a new bottom was put in at Hoffman's aqueduct. A thorough overhauling and repairing of bridges has been made by planking and renewing floor timbers. Lock-houses have been placed in good condition.

The tow-path has been generally graveled and graded and banks strengthened where necessary. The vertical walls have been repaired where necessary along the entire section. Fifteen hundred feet of docking has been built on this section during the season. Waste-weirs have been put in good order. Dams and feeder were repaired and are in good condition.

Navigation has been generally unobstructed on this section during the past season.

SECTION 3 — ERIE CANAL.

On section 3, Erie canal, all locks were placed in good order upon the opening of navigation. Two new lock-gates were put in at lock 31, and general repairs to lock-gates were maintained during the season. New timbers and planking were put in all the aqueducts, and masonry repaired where necessary, during spring repairs. Three new bridges were constructed and placed in position as follows: No. 81, 88 and 107 and all other bridges were repaired by putting in new braces, floor timbers, needle-beams and planking; and all bridges repainted for preservation. The tow-path has undergone a thorough system of graveling and grading, and banks strengthened where deemed necessary. The vertical and slope walls were repaired at various places along the section during the spring repairs. New docking has been placed at various points on the section at Big Nose, Canajoharie, Fort Plain and Mindenville. Navigation has been maintained without interruption during the entire season.

SECTION 4 — ERIE CANAL.

On section 4, Erie canal, before the opening of navigation, the locks were placed in good repair including the taking up of bottom, grouting and replanking lock No. 41. Two new sections of lock-gates have been placed in position, one each at lock 41 and 43 and all other gates were generally repaired during spring repairs. The aqueducts were also placed in good condition during spring repairs. A great amount of repairing has been done to bridges on this section including the reconstruction of bridges No. 139, 140 and 142 and a new iron bridge has also been erected to take the place of wooden bridge No. 157. Among the extensive repairs to bridges on this section are included those at No. 136 iron road bridge at Little Falls; No. 146 iron road bridge at Mohawk; No. 153 iron road bridge at East Frankfort, and No. 154 iron road bridge at McGowans road. No serious leaks have occurred on this section. The tow-path has been raised and repaired, and where necessary has been properly attended to. With the exceptions of portions of the nine-mile level and three-mile level the canal on this section was thoroughly cleaned out and all bars removed before the opening of navigation. The State dam at Little Falls has been kept in an ordinary state of repair, and slope and vertical walls were put in good condition during spring repairs. The docking is in good condition.

SECTION 1 — CHAMPLAIN CANAL.

On section 1, Champlain canal, during the past year, very extensive repairs were made to locks, involving a great amount of labor and machinery to place them in condition to facilitate the business of navigation for the season. Eleven new bridges have been placed in position as follows: Nos. 12, 35, 41, 42, 55, 58, 59 and 53 on the sixteen-mile level; Nos. 22 and 27 on the four-mile level and No. 8 on the three and one-half mile level, also new foot bridge at Flynn's lock, and extensive repairs made to the following bridges: Nos. 3, 6, 17, 21 and 23; have also put in new needle-beams, new floor timbers and planking on bridge No. 66, and raised approaches to bridge No. 57 and put stanchions under bridges Nos. 22 and 35. All the bridges have been painted except such as are to be rebuilt. Necessary repairs have been made to lift-bridges at Waterford and Mechanicville. Waste-weirs, lock and wheel-houses have all been painted. Sixteen hundred and eighty-five feet of old dock have been rebuilt at various points on this section as follows:

Forty feet on the three and three-quarter mile level near the two locks; 160 feet on same level near bridge No. 10; 600 feet on the sixteen-mile level near bridge No. 28; fifty feet near bridge No. 21;

thirty-five feet near bridge No. 34; 200 feet near Searles' waste-weir, and 600 feet in river, from lock 11 to toll bridge. The tow-path on this section has been graveled, graded and placed in excellent condition, almost the entire length, and is still progressing to completion, there being three boats and crews employed thereon. The vertical walls which had fallen in on the sixteen-mile level were rebuilt during the spring repairs. The wing walls of the abutments of road bridge, at waste-weir, No. 4, were reconstructed and necessary repairs to Flynn's lock were made. New timbers have been put under Lansing's waste-weir, and sixty feet of sheet piling have been placed along the same. The bulkhead of waste-weir on the three and three-quarter-mile level has been repaired, and the debris and all accumulations of sediment has been removed from Wilbur's basin and Bemis heights and Stillwater waste-weirs. During spring repairs all bars were removed from bottom of canal and various places widened and deepened. There were four sunken boats on section during season which were raised and removed without detention to navigation. The old wheel-house at lock 9, was rebuilt; also, repaired and shingled lock and wheel-houses at locks Nos. 5, 6, 7 and 8.

On Sunday night, May fourth, by the settling of the walls of a newly constructed culvert, at Smith's brickyard, a bad leak occurred, which caused about fifty-five feet of new vertical wall and tow-path to be swept out, which produced considerable havoc and detention to navigation for about twenty-five days. After this break had been repaired and navigation resumed, another break in the tow-path occurred at bridge No. 11, which swept out about forty feet of bank, which, with all possible dispatch, was promptly repaired. A detailed statement of these washouts will be presented further on in this report.

SECTION 2.— CHAMPLAIN CANAL.

On section 2, Champlain canal, very extensive repairs have been made to the locking system; many of the gates having been old and in bad condition were replaced by new ones to such an extent as to make that feature of the section one of the best. In the last annual report the Fort Edward and Moses Kill aqueducts were recommended to be rebuilt, but such repairs were made to them before the opening of navigation as to strengthen them so far as to insure their safety through the past season. They should be rebuilt before the opening of navigation in 1891. Slight repairs to waste-weirs have placed them in good condition. The sluice-ways around locks 12 and 13, Glens Falls feeder, which were reported a year ago as in bad condition, have been somewhat strengthened, but are not safe to risk another season. At the opening of navigation the tow-path nearly the entire length of section was in bad condition, and constant filling and grading had to be carried on to keep it above water level. The high tow-path opposite Bell's five-mile level, where a wall had been constructed separating canal and river, began sliding early in the season for a distance of two thousand feet along the line, caused by dropping of water from the wall so that the tow-path was at times below the level. Tile drain pipe was put in to drain the water which worked through the wall and tow-path. This piece of wall will have to be thoroughly pointed up before the opening of navigation season of 1891. At Metcalf's (five-mile level) the tow-path began settling to such an extent that seventy-five feet of timber crib filled with stone were put in to protect it. On the one, two, three, five and twelve-mile levels and the Glens Falls feeder the tow-path and berme banks have been raised and strengthened, and slate-rock chips spread on where necessary.

Owing to the past winter being an open one, and the heavy spring rains following, the earth from high embankments slid into the canal, which occasioned bars to accumulate, which were removed as soon as practicable. The docking for a distance of 300 feet in pond at head of guard-lock, Glens Falls feeder, has been rebuilt, and all other docking on section has been repaired where necessary. Several pieces of wall fell in during the spring, owing to original defective construction, on Glens Falls feeder and five and twelve-mile levels, which have been relaid.

At Sherman's lime kilns, Glens Falls feeder, where a vertical wall was built last winter, and where rock bottom was blasted from canal, upon letting water into canal it leaked through seams at the bottom of wall, undermining tow-path, which seams were all cleared out and filled with concrete. The tow-path was filled with gravel, and most of the leaks stopped entirely.

Leaks also occurred around lock 8 and Crocker's waste-weir, which were repaired without detention to navigation. Competent and faithful watchmen have been employed to watch high and dangerous embankments both day and night, thereby preventing serious breaks.

During the past season, five new bridges have been put on this section, and necessary repairs done to all bridges where deemed necessary; the approaches thereto have been graded and made easy as practicable.

The detention to navigation on this section, aggregating sixty-six hours during season, was caused by the sinking and raising of boats, among which was the dropping of the bottom of a boat loaded with stone in the upper two combined locks, the removal of boat and collecting of stone from the bottom of lock being the chief cause of delay. A uniform depth of five feet of water has been maintained during the season on this section.

SECTION 3 — CHAMPLAIN CANAL.

On section 3, Champlain canal, during the month preceding the opening of navigation, the locks were repaired by grouting and concreting bottoms, where necessary, so as to place them in good condition for the season, but before long lock No. 16 will have to be rebuilt. The lock-gates were repaired as condition required; the upper gates at lock No. 19, and mitre-sill, are in bad condition and will have to be renewed. The waste-weirs were put in good condition before opening of navigation. The culverts were also cleaned out and put in good order, but the Walker culvert in the village of Whitehall should be rebuilt as soon as possible. The bridges have been more or less repaired as required, and all have been painted except those which are to be rebuilt this coming winter. The approaches have all been graveled and graded where necessary. There were new bridges built and placed in position as follows: Nos. 105, 108 and 113, and the following are in course of construction and will be put in position as soon as practicable: Nos. 114, 118 and 130, and approaches to each end of change bridge are to be improved. Bridge No. 137½ in the village of Whitehall is to be built immediately. All possible effort is being made by graveling and grading tow-path so as to place it in first-class condition. During the spring repairs at the bottom of canal was cleaned out and all bars removed. The docks have been generally repaired, and about 300 feet of new docking put in south of change bridge in Whitehall; there were also about 300 feet of new docking put in south of lock 16 on the twelve-mile level, and also a portion at Comstocks. By extreme vigilance on the part of patrolmen no serious accident has happened to the banks of the canal during the season.

There were five boats sunk on this section during the season, but no serious detention to navigation was caused thereby, as all possible effort was made to get them out of the way. A uniform depth of five feet of water has been maintained during the season, but owing to the frequent heavy rains difficulty was experienced by extreme rise of water on Wood creek.

The lock-houses have been painted; a new house was built at lock No. 16. The State shop at Whitehall has been painted and is in good order.

On the night of May fourth, owing to an imperfect foundation under a newly constructed culvert at Smith's brickyard on the four-mile level, Champlain canal, about one mile below Mechanicville, a disastrous break occurred by the settling of the walls of the culvert, by which the bottom of the canal to the masonry of the culvert was carried out through and around the culvert, and in its course a large portion of the newly built vertical wall and embankment on the east side of the canal was washed out.

This proved to be a complex state of affairs, and, after repeated efforts of an ordinary character had been made to remedy the difficulty, which proved ineffectual, extreme measures had to be resorted to and a timber aqueduct was constructed by driving ten by twelve-inch piles close together down to the rock on both sides of the culvert, extending entirely across the bottom of the canal; these were capped with ten by twelve-inch timber, with the top at an elevation of about three inches above covering of that portion of the culvert which had not settled.

These two rows of piles were then spanned with eight by sixteen-inch pine timbers, laid close together; this covered with two-inch plank, and above all was placed about ten inches of puddle. On berme and tow-path sides timber wings were formed extending north and south several feet beyond the point of damage to walls by driving close rows of ten by twelve and eight by twelve-inch piles down to the rock, leaving heads above water line. Across new timber culvert a docking of ten by twelve-inch timber, laid horizontally, was placed. These wings were planked with one layer of two-inch plank. Between wings and the vertical walls puddle was placed, which completed the repairs, and the level was filled and navigation resumed.

On May twenty-seventh a break occurred on the three and one-half mile level near the Power's culvert, which washed out about fifty-five lineal feet of tow-path to a depth of about ten feet; this was repaired by building a timber crib and loading it with stone; the tow-path was built up in front of crib and work completed and navigation resumed May thirtieth.

Since that time navigation has been uninterruptedly maintained with the exception of small detentions caused by high water in Wood creek and low water in the Mohawk river, and slight detentions caused by sunken boats. During the month of April, preceding the opening of navigation, the work of bottoming out the Erie canal was carried on to a considerable extent, and during the season it proved to have been a source of great benefit to navigation. I would recommend such service for the spring of 1891.

Owing to the settling of pile foundation and to insufficient wheel base under the swing-bridge at Lawrence street, Albany, it was nearly impossible to operate it. The foundation has been leveled up and wheels with broader bearing surfaces have been placed, and repairs made to portions of superstructure which had been damaged by being struck by boats in their passage through. The bridge can now be operated satisfactorily. I would recommend that the pier at this bridge be lengthened so that when the bridge is opened boats can not strike it, also the rebuilding of the wall on tow-path side from lock 1 to lock 2. I would also recommend that the tow-path on the Champlain canal from the junction up to Dotter's lock, Cohoes, be raised from one to two feet with gravel, and the top of the feeder on west side of guard-lock be retimbered. The docking on the east side of the river should be rebuilt by vertical wall or timber.

The bottom of lock No. 5 should be taken up and concreted; lower pier at lock No. 6 should be rebuilt; the bottom of lock No. 7 should be thoroughly examined and repaired where necessary; locks Nos. 9 and 13 should be also examined and repaired. The vertical walls along section 1, Erie, are in a wretched condition, and should be generally rebuilt. The timber trunk on the lower Mohawk aqueduct is in an unsafe condition, and the time has now arrived when it is necessary to take positive steps to renew it. This trunk was, I think, built in the year 1875. The waste-weir above lock No. 20 has been braced up and closed for the past five or six years. I would recommend that it be rebuilt.

The timber trunk on the upper Mohawk aqueduct is also in an unsafe condition, the timber protection against ice on the piers has been displaced and the expensive masonry is exposed to constant danger from ice in the breaking-up of the river in the spring-time. A new trunk should be built the coming winter at Van Wie's aqueduct, and extensive repairs made to the trunk at Schoharie creek, Yatesville, Lasher's and Canajoharie aqueducts. The repairs needed at the latter aqueduct are so expensive as to be entirely beyond the scope of the ordinary repairs fund. I would therefore recommend that the Legislature be requested to make a special appropriation early in the session of not less than $150,000 for rebuilding or repairing the aqueducts on this division of the Erie canal.

The stone pier at Fort Plain aqueduct, which gave way in 1889 and was replaced by a temporary wooden band, has been rebuilt with stone.

The creek above and below the Pattersonville aqueduct should be cleaned out. The channel is very much filled with rubbish and dirt which has been accumulating for years past. The channels above and below Auriesville, Lashers, Yatesville, Castle Creek, Mohawk and Ilion aqueducts are filling up very fast and should be thoroughly cleaned out. The paving in the channel above the Fort Plain aqueduct was torn out by freshets and should be replaced to prevent the undermining of the aqueduct. The stone abutment at Lasher's aqueduct should be rebuilt. The creek above the Fultonville aqueduct should be cleared out and be paved to prevent undermining. During the past season freshets on Moyer creek produced havoc with the series of dams or drops, all of which were torn out except the one nearest the Frankfort aqueduct which was secured at a cost of about $4,000. I would recommend that the Legislature be asked to make special appropriation to put this in proper condition.

The trunk of the Moses Kill aqueduct, Champlain canal, will be replaced the coming winter with new timber.

I would also recommend the building of a new dam at Little Falls, on the Erie canal system.

The following new bridges have been built during the year: Nos. 11, 13, 59, 81, 88, 139, 140, 142. A wooden bridge at Liberty street, Schenectady, has been taken down and an iron bridge substituted therefor. A new berme abutment has been built at bridge 88, Erie canal, and necessary changes were made to masonry at bridge No. 157, to fit it for the reception of an iron structure.

The following new wooden bridges, with iron chords, were, during the past season, placed in position on the Champlain canal: Nos. 12, 13, 22, 27, 34, 35, 53, 55, 58, 71, 72, 78, 79, 105, 108, 113 and 115. The following bridges are framed and will be put up within the next month: No. 1 on Glens Falls feeder, Nos. 8, 41, 70, 118 and 130.

The following wooden bridges on the Erie canal should be rebuilt during the coming season: Nos. 8, 31, 32, 36, 75, 76, 80, 84, 85, 90, 95, 96, 97, 102, 106, 132, 135, 137, 163 and 166.

The following bridges on Champlain canal should be rebuilt during the coming year: Nos. 11, 16, 38, 42, 49, 59, 67, 73, 100 and 114. The bridge at Glen street, over the Glens Falls feeder, should be rebuilt at once. Bridge No. 9 which stood on timber bents has fallen down; two new abutments and a new superstructure are needed here. It is claimed that no obligation rests upon the State for the maintenance of this bridge, but I have investigated the matter and can find no reason why this should be an exceptional case. Bridge No. 91 stands on timber bents, and should be reconstructed by building new stone abutments and superstructure. I would recommend that such be done.

The berme abutments of bridges No. 46, 53 and 111 need considerable repairing to wing walls.

The berme abutment of bridge No. 114 should be rebuilt, or dug behind and drawn back, and the southern wing wall relaid. The north abutment of change bridge just east of guard-lock, head of Glens Falls feeder must be rebuilt and a new superstructure erected thereon during the coming winter. One of the cables of the Mechanicville lift-bridge broke during the summer, and the floor of bridge dropped and was considerably damaged.

These cables have been in use over four years; they are now replaced by new ones. I would recommend the renewal of these cables every three years, as past experience has proven them to be unsafe after three years' service. Locks Nos. 6 and 9, Champlain canal, have been pressed forward, and the chambers rendered too narrow for the passage of boats which pass through other locks without difficulty. The wedging of boats at these locks has caused considerable delay to navigation during the past season. I can see no way to overcome this difficulty except to rebuild said locks. The difficulty at lock 9 can be obviated by cutting off an equal portion from the face of each side of the lock. The walls of lock No 16, Fort Ann, which were temporarily repaired last spring, has not caused any trouble during the season. I would recommend that this lock be thoroughly repaired to prevent any difficulty.

The plank docking on the Erie canal west of Schenectady is in a very bad condition. If a break should occur at this place it would cause serious loss to the State as well as detention to navigation. The $18,000 appropriated by the Legislature in 1889 for the building of a vertical wall at this place was expended last winter, and was insufficient to meet the emergency. The Legislature should be asked for a further appropriation for the continuation of this work until the old docking is fully replaced by a substantial wall laid in cement, the same as was built last winter.

Extensive repairs have been made during the season to the Troy dam and fishway. The time is not far distant when this dam must be replaced by a new one.

A temporary dam built in front of the basin at West Troy a year or two ago is unsafe; instead thereof I would recommend the building of vertical wall, filling in behind with earth to form tow-path, which by so doing, will do away with the present swing-bridge and also the elevated bridge, which are both in very bad condition. On the opposite side of the canal there should be a pair of gates inserted near the swing-bridge, which would divide the short level and large basin, so that in case of accident at locks or sinking of boats the level could be drawn off in thirty minutes; whereas, at present, it takes twenty-four hours, thereby causing injury to boats, and considerable detention to navigation; by this change, boats could remain in large basin. I would recommend the building of a new bulkhead at the waste-weir, West Troy basin.

The bottom of the walls of lock 23, Erie canal, has crowded somewhat into the canal, and has become so narrow that boats get wedged therein during passage through lock; that has occurred about fifteen times during the past season; I would recommend the cutting-off of the face of walls at bottom. I would recommend that a new repair boat be built for section 4, Erie canal. The State dredges Nos. 1 and 2 should be placed upon dry dock and repaired during the coming winter. There should be one new dump scow built. A new boiler should be placed in the steam-pump boat. For a number of years past the vertical walls through the sixteen locks, section 1, Erie canal, have been crumbling away, until now they are in very bad condition. This is another very important subject for the consideration of the Legislature, inasmuch as it involves a large expense beyond the space for action of the ordinary repairs fund.

The expenditures made on this division will be found in an itemized statement attached to this report.

SUMMARY *of expenditures on the eastern division of the canals from October 1, 1889 to September 30, 1890.*

Eastern division, office	$2,159 42
Eastern division	75,620 77
Section 1, Erie canal	9,737 90
Section 2, Erie canal	5,351 44
Section 3, Erie canal	12,237 28
Section 4, Erie canal	10,727 68
Section 1, Champlain canal	14,985 44
Section 2, Champlain canal	4,224 79
Section 3, Champlain canal	5,465 61
Total	$140,510 33

G. E. SIMMONS,
Assistant Superintendent.

DETAILED STATEMENT *of expenditures on the eastern division of the canals by G. E. Simmons, Assistant Superintendent of Public Works, from October* 1, 1889 *to September* 30, 1890, *both inclusive.*

FOR WHAT EXPENDED.	Office.	Division.	ERIE CANAL.				CHAMPLAIN CANAL.		
			Section 1.	Section 2.	Section 3.	Section 4.	Section 1.	Section 2.	Section 3.
Blacksmithing	....	....	....	$132 41	$225 36	$309 60	$246 44	$277 47	$81 32
Clerk, salary of	$1,500 00	$76 54	$8 00	....	....	....	....	....	....
Cement	....	80 35	....	....	56 00	40 35	....	29 13	65 00
Coal, all uses	....	1,336 55	241 05	56 63	16 99	27 58	66 50	26 15	256 14
Hardware, iron castings, etc	....	5,857 07	475 47	181 11	324 98	134 24	398 65	195 86	443 56
Horses, burying of	....	....	12 00	....	22 00	2 00	....	....	....
Ice breaking	....	....	....	....	14 00	....	....	....	....
Lumber and timber (Cohoes shop)	....	32,832 91	....	....	....	....	....	....	....
Lumber and timber for sections	....	....	135 01	2,419 51	4,965 08	5,696 14	4,976 29	1,745 27	2,257 39
Labor and team work	....	14,455 50	4,937 74	486 65	3,441 43	2,511 25	6,598 13	949 62	469 08
Labor (skilled) Cohoes shop	....	12,922 61	....	....	....	....	....	....	....
Labor on tug, dredges and scows	....	4,397 22	....	....	....	....	....	....	....
Livery hire	....	108 00	27 00	51 50	67 50	46 00	8 50	34 80	100 00
Machinery and tools	....	42 45	....	....	....	....	....	26 97	....
Miscellaneous expenses	24 39	101 78	46 32	10 00	144 83	56 22	11 00	24 45	31 90
Merchandise, general	....	1,655 51	844 94	916 44	1,566 47	623 86	1,062 19	99 02	304 09
Oil for locks	....	....	240 00	90 00	36 72	....	62 16	165 00	80 00
Paint, painting, oil, etc	....	713 88	1,130 41	482 25	646 01	618 40	1,075 63	502 28	814 60
Pike and sounding poles	....	....	....	175 00	....	37 50	....	....	6 50
Postage	35 00	....	....	....	....	....	....	....	....
Repairs to tug, dredges and scows	....	344 35	....	41 43	6 10	138 36	117 39	58 16	22 34
Repairs to machinery	....	....	....	....	....	....	....	....	....
Rent (State shops)	....	....	....	140 00	....	....	170 66	....	....
Rope, lines, etc	....	4 68	....	....	93 35	155 87	....	....	40 07
Snubbing posts	....	....	....	....	....	....	....	....	200 00
Supplies to tug, dredges and scows	....	194 66	....	....	....	....	....	....	....
Stationery, printing, etc	242 45	19 80	....	....	....	....	....	....	....
Sawing timber	....	47 61	65 96	....	....	....	20 05	....	....
Sand, gravel and clay	....	108 50	216 36	....	35 70	6 80	47 16	1 25	48 00
Stone	....	136 34	1,276 42	4 50	432 00	255 82	....	2 50	50 00
Straw, hay and manure	....	....	6 00	....	....	....	....	....	7 00
Telegraphing	89 00	26 68	....	3 76	49 46	6 85	30 03	8 87	21 37
Telephone and messenger service	103 30	20 95	56 30	....	4 65	4 70	31 00	....	....
Transportation, express companies	165 23	8 45	10 86	45	9 75	4 15	3 15	1 50	3 10
Transportation, rail and water	....	98 38	2 06	9 80	78 90	51 99	51 01	13 00	94 15
Towing	....	30 00	6 00	150 00	....	....	9 50	63 49	70 00
Totals	$2,159 42	$75,620 77	$9,737 90	$5,351 44	$12,237 28	$10,727 68	$14,985 44	$4,224 79	$5,465 61
Grand total									$140,510 33

SECTION No. 1, ERIE CANAL — T. I. HARDIN, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of T. I. Hardin, Superintendent of Repairs of sixteen miles of the Erie canal, extending from west end of lower Mohawk aqueduct to Albany basin, during the fiscal year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.
Locks	46	$9,093 09
Lock tending (exclusive of oil)	....	37,912 16
Lock-gates	186	....
Aqueducts	1	....
Waste-weirs	7	....
Culverts	16	....
Weigh-locks	2	....
Farm bridges (wood)	9	2,171 13
Swing bridges (iron)	3	
Road bridges (wood)	4	
Road bridges (iron)	24	
Suspension bridges (wood)	1	
Suspension bridge (iron)	2	
State scows	2	....
Ice-breakers (one useless)	3	....
Under-water excavators	1	....
Lock-houses	8	....
Workshops	1	....
Watch-houses	29	....
Storehouses	2	....
Raising and repairing tow-path and berme bank, not including repairs to slope walls	....	2,517 35
Slope wall	....	1,700 37
Watching canal	....	6,064 96
Other miscellaneous expenditures	....	78 10
Other work of consequence which does not come any of the above heads, viz.:		
Superintendent's salary	....	1,500 00
Total	....	$61,037 16

Locks.

During the spring general repairs were made to the locks; locks Nos. 6, 9 and 13, were partially replanked.

Lock-gates.

Twenty-two new lock-gates have been put in locks as follows: Locks No. 1, one lower and two upper gates; No. 4, four lower gates; No. 5, two upper gates; No. 6, two upper gates; No. 8, one upper gate; No. 9, one upper gate; No. 13, two lower gates; No. 14, one lower gate; No. 16, one upper gate; lower side-cut West Troy, two lower gates; upper side-cut, one lower and two upper gates.

Balance-beams.

Thirty-seven balance-beams have been placed on lock-gates.

Waste-weirs.

The waste-weir located in the basin at West Troy is in a very dilapidated condition and should be rebuilt during the coming winter.

The waste-weir between locks 9 and 10 should have a new hoist place.

Culverts.

The culvert at Thirteenth street, West Troy, leading from "Dry river" has been cleaned out.

State boats.

There are, at the present time, one gravel scow, one carpenter's repair boat, three ice-breakers; two are in good condition and one is unfit for service.

Bridges.

The bridges on the section have been repainted and kept in good repair. Bridges No. 11, Fifth street, and No. 13, Seventh street, West Troy, have been taken down and replaced by new ones. These bridges are iron chord, with wood upper works. The covered bridge near lock No. 3 has been reshingled.

Lock Watch-houses.

New lock-houses have been built at locks Nos. 10 and 16; all the houses have been repaired and painted.

Piers.

A new wooden pier has been built in the basin at Albany (near Lawrence street). The piers to locks have been repaired and filled with stone.

Tow-path.

The tow-path has been graveled from the aqueduct to Seventh street in West Troy.

Docking.

Ninety-seven thousand three hundred and forty feet of hemlock docking have been laid and secured by 45,120 feet of oak ties.

Slope and vertical walls.

The slope and vertical walls on the section have been repaired during the spring. The vertical walls are in bad condition and liable to fall into the levels on account of original faulty construction and poor material used. A weak portion of tow-path bank near aqueduct has been strengthened by lodgment of stone.

Aqueduct.

One truss has been put in aqueduct; several are yet in bad condition. The string pieces in outside trusses are in some places becoming rotten, allowing washers to sink into the wood; where this occurs it will be necessary to put in new timber. The timber covering on up-stream side of aqueduct has been wholly destroyed by ice during spring freshets, and should be recovered as soon as possible with new timber.

Cohoes dam.

One hundred feet of the apron of the dam has been replaced.

Depth of water.

There has been a depth of seven feet of water on this section during the season.

Navigation.

The only delay to navigation was the sinking of a boat loaded with pig-iron in lock No. 11. A delay of four hours was caused in removing the cargo.

Sunken boats.

Seven sunken boats were raised and assisted to dry docks. Two of this number were loaded with perishable cargoes, to which the damage was small.

Two boats were assisted from the Cohoes dam, where they had drifted through neglect of crews, in not fastening their vessels to the safety cable.

RECOMMENDATIONS.

Bridges Nos. 1 (Albany), 8 and 9 (Troy road), 10, 14, 15, 16, 17, 18, 19, 20 and 21 and bridge on western canal near junction, all require general repairs by planking, floor timbers, needle-beams, chords, etc., and should be attended to as early as possible.

The swing-bridge and foot bridge at south side of upper side-cut crossing basin, should be removed, vertical wall extended and tow-path made, as the basin south of this point has been abandoned and is without care. Part of the basin bank was washed out last December, causing the water to flow into the river at a point south of Congress street bridge. A dam was constructed near the short level (under the foot bridge), to retain the water in the upper basin and the short level. The dam is not substantial enough to last long with the heavy pressure of water constantly against it. This requires early attention.

The swing-bridge at north side of short level, upper side-cut, should have a thorough overhauling and be made heavier; it requires constant attention, on account of the great traffic over it.

Lock-gates should be placed in the basin at south side, near short level, so as to avoid emptying the basin when accidents occur on the short level.

The miter-sills in all the locks should be examined and repaired.

Locks Nos. 11, 13 and 14 should be repointed with Portland cement.

The covering of the feeder at guard-lock on Champlain canal is very much decayed and should be re-covered. The tumble-gates in locks Nos. 1 and 2, Champlain canal, should be replaced by new ones. The vertical wall between aqueduct and change bridge needs repairing. The pier in basin at Albany should be changed so as to prevent boats from striking it. New gates should be placed in the weigh-locks at Albany and West Troy.

T. I. HARDIN,
Superintendent Section No. 1, Erie canal.

SECTION No. 2, ERIE CANAL — WILLIAM HATHAWAY, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of William Hathaway, Superintendent of Repairs of thirty-two miles of the Erie canal, extending from head of lower Mohawk aqueduct to head of lock No.* 27, *during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Cost of new structures.	Cost of repairs of old, etc.	Total, new and old.
Locks	....	$272 80	$272 80
Lock tending (exclusive of oil)	....	6,588 00	6,588 00
Farm bridges (wood)	$117 15	229 50	346 65
Farm bridges (iron)			
Road bridges (wood)			
Road bridges (iron)			
Tow-path bridges (wood)			
Tow-path bridge (iron)			
Raising and repairing tow-path and berme bank (not including repairs to slope wall)	....	2,158 25	2,158 25
Watching canal and State house, Schenectady	....	854 00	854 00
Other work of consequence which does not come under any of the above heads, viz.:			
Diver, etc	....	122 00	122 00
Superintendent's salary	....	750 00	750 00
Total	$117 15	$10,974 55	$11,091 70

WILLIAM HATHAWAY,
Superintendent.

SECTION No. 2, ERIE CANAL — JAMES COLLINS, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each ,on the line of the canal under the charge of James Collins, Superintendent of Repairs of thirty-two miles of the Erie canal, extending from head of lower Mohawk aqueduct to head of lock No.* 27, *during the* 190 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total, new and old.
Locks	19	$540 00	$540 00
Lock tending (exclusive of oil)	....	9,969 00	9,969 00
Lock-gates	74	....	....
Aqueducts	3	416 50	416 50
Waste-weirs	3	....	....
Culverts	18	....	....
Farm bridges (wood)	47	416 50	416 50
Farm bridges (iron)			
Road bridges (wood)			
Road bridges (iron)			
Tow-path bridges (wood)			
Tow-path bridges (iron)			
State scows	2	....	....
Ice-breakers	2	....	....
Lock-houses	9	....	....
Workshops	1	....	....
Watch-houses	9	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	....	3,245 62
Dams (feet 672)	....	....	....
Watching canal	....	980 00	980 00
Other work of consequence which does not come under any of the above heads, viz.:			
Watching State house	....	70 00	70 00
Special foreman	....	....	312 00
Diver	....	....	200 00
Feeder tender	....	....	60 00
Publishing abstract	....	....	45 00
Superintendent's salary (commencing March 24, to October 1, 1890)	....	....	657 26
Total	....	....	$16,911 88

Locks.

All locks were repaired on entire section during spring repairs.

Lock-gates.

One pair new lock-gates has been put in at lock 27 ; also at lock 22.

Aqueducts

Were all repaired before opening of navigation and a new bottom was put in at Hoffman aqueduct.

Bridges

Have all been overhauled, with new floor timbers and plank.

Lock-houses

Were all repaired and put in good condition.

Tow-path

Has been repaired and graveled and berme bank strengthened at various points.

Slope and vertical walls

Were all repaired at various points along entire section.

Docking

Fifteen hundred feet of new docking has been put in along section.

Waste-weirs

The waste-weirs have all been put in good condition along the entire section.

Dams and feeders.

The dams and feeders have been repaired where necessary and they are now in good condition.

Sunken boats.

The boat Frank E. Wilson sank, while loaded with lumber, upon the three-mile level and was raised and taken to dry dock.

RECOMMENDATIONS.

I would recommend the following improvements: That a new trunk be put in at the upper aqueduct; that a new apron be built at the head of the dam on the three-mile level; that new lock-gates be set in at locks Nos. 19, 22, 24 and 26; that the bottoms of locks Nos. 22, 25 and 27 be taken up and relaid; that new piers be put in at locks Nos. 19, 20, 21, 22, 23, 24, 25, 26 and 27; that three new bridges be built at the west end of the section; that the creek running under Pattersonville aqueduct be cleaned out; that the vertical wall at Schenectady be relaid for one mile; that 3,000 feet of docking be laid at Schenectady; and that a new State boat and a new ice-breaker be furnished to section No. 2.

JAMES COLLINS,
Superintendent.

SECTION No. 3, ERIE CANAL.— JOHN HUGHES, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of John Hughes, Superintendent of Repairs of thirty-two miles of the Erie canal, extending from head of lock* 27 *to head of lock* 34, *during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Cost of repairs of old, etc.	Total, new and old.
Locks	$307 32	$307 32
Lock tending (exclusive of oil)	5,152 00	5,152 00
Lock-gates	60 80	60 80
Aqueducts	1,114 92	1,114 92
Culverts	480 08	480 08
Farm bridges (wood) Farm bridges (iron) Road bridges (wood) Road bridges (iron) Tow-path bridges (wood) Tow-path bridges (iron)	188 17	188 17
Ice-breakers	101 20	101 20
Raising and repairing tow-path and berme bank (not including repairs to slope wall)	771 50	771 50
Dams	76 71	76 71
Docking	62 35	62 35
Watching canal	622 00	622 00
Other work of consequence which does not come under any of the above heads, viz.:		
Workshop watchman	106 00	106 00
Feeder tending	282 00	282 00
Drawing lumber	25 80	25 80
Publishing abstract	17 50	17 50
Superintendent's salary	842 74	842 74
Total	$10,211 09	$10,211 09

JOHN HUGHES,
Superintendent.

SECTION No. 3, ERIE CANAL — MARTIN ALLEN, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of Martin Allen, Superintendent of Repairs of thirty-eight miles of the Erie canal, extending from head of lock* 27 *to head of lock* 34, *during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Total cost, new and old.
Locks	14	$545 00
Lock tending (exclusive of oil)	....	6,166 00
Lock-gates	56	....
Aqueducts	8	664 50
Waste-weirs	4	....
Farm bridges (wood)	42	1,330 50
Farm bridges (iron)	7	
Road bridges (wood)	7	
Road bridges (iron)	5	
Tow-path bridges (wood)	5	
State scows	2	....
Ice-breakers	2	....
Lock-houses	7	....
Workshops	2	....
Watch-houses	2	160 00
Timber sheds	2	....
Piling machines	1	....
Raising and repairing tow-path and berme bank, (not including repairs to slope walls)	....	3,503 69
Cleaning out bottom of canal during spring repairs,	....	794 65
Dams (672 feet)	....	....
Watching canal	....	972 50
Other work of consequence which does not come under any of the above heads, vis.:		
Feeder tending	2	435 00
Feeder repairs	2	204 50
Publishing abstract from March 24 to Oct. 1, 1890	....	45 00
Superintendent's salary from March 24 to Oct. 1, 1890,	....	657 26
Total	....	$15,479 60

Locks.

Before the opening of navigation all locks were thoroughly repaired on entire section.

Lock-gates.

Two new lock-gates have been put in at lock 31, and all lock-gates on entire section have been repaired.

Aqueducts.

Aqueducts were all repaired, and new timbers and plank put in during spring repairs.

Bridges.

All the bridges on entire section have had repairs — new braces, floor timbers, needle-beams and plank. A new bridge has been put up at No. 88, also one at No. 81 and No. 107, all with iron chords framed on the section; also, the bridges have all been painted on entire section.

Tow-path.

The tow-path has been repaired and graveled, and the berme bank strengthened at various points.

Slope and vertical walls

Were repaired at various places on entire section during spring repairs.

Docking.

New docking has been built on fourteen-mile level at Fultonville, Big Nose, Canajoharie, Fort Plain, Mindenville and various other places.

Sunken boats.

The boat Sim Elms, loaded with lumber, sunk in near lock 33. After being partly unloaded she was pumped up and taken to Canajoharie dry-dock.

RECOMMENDATIONS.

I would respectfully recommend that entire new trunks should be put in Van Wie aqueduct. The Schoharie creek, Yatesville, Lashers and Canajoharie aqueducts have new sides. The paving should be replaced in the creek at Fort Plain to prevent the undermining of the aqueduct. The stone abutments at Lasher's aqueduct are in very bad condition, and should be taken down and rebuilt. New piers should be built at locks 30, 31, 32, 33 and 34. To prevent the tow-path below Amsterdam from sliding into the river, it should be piled. The creek at Auriesville should be cleaned out, as the arches are all filled up.

MARTIN ALLEN,
Superintendent.

SECTION No. 4, ERIE CANAL — JOHN F. THOMAS, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of John F. Thomas, Superintendent of Repairs of twenty-nine miles of the Erie canal, extending from head of lock No.* 34 *to east line Oneida county, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total, new and old.
Locks	22	....	....	....
Lock tending (exclusive of oil)	......	....	$8,063 00	$8,063 00
Lock-gates	88	$116 17	173 60	289 77
Aqueducts	6	....	132 40	132 40
Waste-weirs	7	....	....	....
Culverts	6	....	....	....
Farm bridges (wood) Farm bridges (iron) Road bridges (wood) Road bridges (iron) Tow-path bridges (wood) Tow-path bridges (iron) Bridges of all kinds	50	664 07	197 04	861 11
State scows	2	....	....	....
Small boats	2	....	....	....
Ice-breakers	3	56 30	214 80	271 10
Lock-houses	6	....	....	....
Workshops	2	....	....	....
Watch-houses	11	....	....	....
Timber-sheds	2	....	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	801 92	801 92
Dams (feet)	1	....	....	....
Slope wall	......	....	24 80	24 80
Watching canals	......	....	500 00	500 00
Tools, including shovels, picks, crowbars, axes, etc	......	62 00	....	62 00
Other miscellaneous expenditures	......	....	13 50	13 50
Other work of consequence which does not come under any of the above heads, viz.:				
Drawing water, picking up tools, etc	......	....	22 30	22 30
Superintendent's salary	......	....	842 74	842 74
Total	......	$898 54	$10,986 10	$11,884 64

SECTION No. 4, ERIE CANAL.— H. M. WOOD, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditure, and the total cost of each, on the line of the canal under the charge of H. M. Wood, Superintendent of Repairs of twenty-nine miles of the Erie canal, extending from head of lock* 34 *to east line of Oneida county, during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total, new and old.
Locks	22	... .	$732 50	$732 50
Lock tending (exclusive of oil)	......	....	9,722 00	9,722 00
Lock-gates	88	110 00	543 95	653 95
Aqueducts	5	....	561 65	561 65
Waste-weirs	7	....	65 00	65 00
Culverts	6	....	149 25	149 25
Farm bridges (wood)	50	335 00	1,325 92	1,660 92
Farm bridges (iron)				
Road bridges (wood)				
Road bridges (iron)				
Tow-path bridges (wood)				
Tow-path bridges (iron)				
State scows	2	....	51 22	51 22
Small boats	1	....	....	....
Ice-breakers	2	....	....	....
Lock-houses	6	....	....	....
Workshops	2	....	....	....
Watch-houses	11	....	....	....
Timber-sheds	2	....	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	815 57	815 57
Cleaning out bottom of canal during spring repairs	......	....	218 00	218 00
Dams (feet)	1	....	63 45	63 45
Slope wall	.....	290 00	760 09	1,050 09
Docking	......	....	669 81	669 81
Watching canal	......	....	1,220 00	1,220 00
Wheelbarrows, removing dams (spring)	......	....	13 50	13 50
Other work of consequence which does not come under any of the above heads, viz.:				
Sunken boat	......	....	110 53	110 53
Raising derrick	......	....	14 45	14 45
Cleaning shop	......	....	36 72	36 72
Drawing lumber	......	....	36 70	36 70
Superintendent's salary	......	....	657 26	657 26
Printing abstracts	......	....	32 25	32 25
Total	......	....	....	$18,534 82

Locks.

Previous to opening of navigation locks on this section were given a general repair, including pumping of lock No. 4, taking up bottom, grouting and replanking same, also pointing up the masonry.

Lock-gates.

The lock-gates on this section were, as far as could be, thoroughly repaired before opening of navigation; since then one right-hand upper gate has been placed in lock 41 and one right-hand upper gate in lock 43.

Aqueducts.

The Mohawk, Castle creek and Ilion aqueducts are taken out at the close of navigation to prevent damage to property by the overflowing of creeks. These aqueducts, also Frankfort and Ferguson aqueducts, were thoroughly repaired before opening of navigation. In this connection I might call attention to the washout of Moyer creek, at Frankfort, which threatened serious damage to Frankfort aqueduct, but which is now in the course of repair, and further damage to same averted; also to the cleaning of Steele's creek below the Ilion aqueduct, which was thoroughly done, and is very satisfactory to the people whose property is endangered by the overflowing of said creek.

Bridges.

Bridges on this section have required a great amount of labor and attention the past season.

Frame farm bridges Nos. 139, 140 and 142 have been rebuilt; an iron road bridge has been erected in place of wooden cart road bridge No. 157.

The following bridges have been replanked: No. 136, iron road-bridge, at Little Falls; No. 146, iron road-bridge, at Mohawk; No. 153, iron road-bridge, at East Frankfort, and No. 154, iron road-bridge, at McGurdan's. Other farm and road-bridges on section have required more or less repair.

All bridges on this section have had two coats of paint.

Towing-path.

Raising and repairing towing path on this section has received proper attention. One leak in towing-path occurred between locks 39 and 40, but was discovered and repaired before serious damage resulted.

Bottoming out canal.

With the exception of a portion of the nine-mile level and the three-mile level from Mohawk tide water to lock 42 the canal was thoroughly cleaned before opening of navigation, and all bars were removed.

State dam.

State dam at Little Falls has been kept in its ordinary state of repair.

Slope and vertical walls.

Slope and vertical walls on this section were put in good repair before opening of navigation; 120 feet of vertical wall was taken down and relaid at head of lock 38, tow-path; seventy-five feet head of lock 34, berme bank; sixty feet at foot of lock 45, which caved in during suspension of navigation, caused by breach on section 5; also fifty feet which caved in at four-mile grocery near bridge No. 169 at the opening of navigation, which was relaid and sheet piled.

Docking.

Before opening of navigation docking between bridge No. 124 and lock No. 34 was sheet piled, and, as far as could be, repaired. New docking has been put in between bridge No. 158 and lock No. 45, Frankfort; on berme bank of canal at Ilion; at head of lock 42, Mohawk, between bridge No. 136 and lock No. 38, Little Falls; also been repaired and replaced between locks Nos. 35 and 36.

Sunken boats.

Boat Chas. R. Adams at head of lock No. 35, loaded with oats; boat D. H. Higgins at head of lock No. 39, loaded with sand.

Depth of water.

Six and a half to seven feet of water has been maintained on each level of this section.

REMARKS.

Three new bridges will be required to be rebuilt during the coming year, Nos. 132, 135 and 137. There is now on hand material for bridges Nos. 163 and 166, which will be rebuilt during present season of navigation, if possible. Both the carpenter and gravel scows are in bad condition and new boats should be provided in their stead. I also desire to call your attention to the docking at head of lock No. 34, Minlenville, which should be replaced by a substantial vertical wall. Locks Nos. 40, 41, 42 and 43 are to be lengthened at the close of this season's navigation. I would suggest that the above-named locks be thoroughly examined, and should any defects in the same exist, that they be repaired while the contractors have them pumped out.

H. M. WOOD,
Superintendent.

SECTION No. 1, CHAMPLAIN CANAL — James Dougrey, Jr., *Supt.*

Annual Report *showing the name and number of structures or works, the different heads of expenditure and the total cost of each, on the line of the canal under the charge of James Dougrey, Jr., Superintendent of Repairs of thirty-two miles of the Champlain canal, extending from north end of Cohoes bridge to foot of lock No.* 11, *during the year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total cost new and old.
Locks	11			$1,544 16
Lock tending (exclusive of oil)				8,233 84
Lock-gates	44			
Aqueduct	1			
Waste-weirs	10		$152 20	152 20
Culverts	7			
Weigh-lock	1			
Farm bridges (wood)	33	$1,206 00	724 00	1,930 00
Farm bridges (iron chord)	7			
Road bridges (wood)	18			
Road bridges (lift)	2			
Road bridges (iron)	3			
Road bridges (iron chord)	5			
Tow-path bridges (wood)	12			
Change (iron chord)	1			
Change (wood)	1			
State scows	2		77 20	77 20
Horse patrol				122 00
Ice-breakers	2			
Lock-houses	7	16 00	28 00	44 00
Workshop	1			
Watch-houses	8			
Storehouse	1			
Carpenter's boat	1			
Raising and repairing tow-path and berme bank (not including repairs to slope walls)				3,764 38
Cleaning out bottom of canal during spring repairs				1,986 16
Sunken boats				68 90
Dams (740 and 1,100=1,840 feet)	2		46 04	46 04
Slope wall and vertical			126 37	126 37
Docking		560 00	98 70	658 70
Repairs of breaches				137 70
Watching canal				2,733 62
Tending lift-bridge				806 00
Other work of consequence which does not come under any of the above heads, viz.:				
Publishing abstracts				81 00
Superintendent's salary				1,500 00
Total				$24,012 27

Locks.

On this section we have made the following repairs:

Guard-lock No. 1. Planked one gate, put bolts through beams to arms of gates.

Side-cut locks No. 2, 3 and 4. Spliced heel-post on lock No. 3, trimmed toe-post on lock No. 4 and made general repairs to all.

Lock No. 5. Repaired gearing and gates.

Lock No. 6. Put in stop-gates, new toe-post and gate.

Lock No. 7. Put timbers in for stop-gates, put timber on top of drop-gate, also put in wooden coping to prevent lock from overflowing.

Lock No. 8. Put timbers in for stop-gates.

Lock No. 9. Put timbers in for stop-gates, new gear and frame for tumble-gate, also repaired planking on gates.

Lock No. 10. Put in one new valve and one new lever, also straightened connecting rods and made other small repairs.

Bridges.

Took down old, framed and put up new, the following bridges:

Nos. 12, 53, 55 and 58 on sixteen-mile level.

Nos. 22 and 27 on four-mile level.

New foot bridge at Flynn's lock.

Framed bridge No. 41, also made the following repairs to bridges:

No. 8. New floor timbers and planking.

Nos. 3, 6, 17, 21 and 23. New planking.

No. 66. Framed and put in five new needle-beams; new floor timbers and planking.

No. 57. Raised approaches.

Nos. 22 and 35. Put stanchions under.

All the bridges on section have been painted excepting those to be rebuilt; also, repairs have been made to the lift-bridges at Mechanicville and Waterford.

Docking.

Old docking has been taken out and new put in as follows :

Forty feet on three and three-quarter mile level near the two locks.

One hundred and sixty feet docking and sheet piling on three and three-quarter mile level near bridge No. 10.

Six hundred feet on sixteen-mile level near bridge No. 28.

Fifty feet on sixteen-mile level near bridge No. 21.

Thirty-five feet on sixteen-mile level near bridge No. 34.

Two hundred feet on sixteen-mile level near Searle's waste-weir.

Six hundred feet in river from lock No. 11, toll bridge.

Towing-path.

The towing-path on this section has been raised, repaired and graveled almost the entire length; three boats and crews having been employed.

Vertical wall.

During spring repairs, several pieces of vertical wall that had fallen in on sixteen-mile level were rebuilt. The wing walls of the abutment of highway road bridge at waste-weir No. 4, were taken down and rebuilt, and Flynn's lock was pointed.

Waste-weirs.

Put new timbers under Lansing's waste-weir, and sixty feet sheet piling along same; repaired bulkhead of waste-weir on three and three-quarter mile level; cleared ice and debris from Wilbur's basin, Bemis heights, and Stillwater waste-weirs during freshets.

Prism of canal.

During spring repairs all bars were removed, places widened and deepened.

Sunken boats.

Four boats have sunk, but all have been raised without detention to navigation.

Painting.

Waste-weirs, lock and wheel-houses on this section have been painted.

Lock and wheel-houses.

Took down old and rebuilt wheel-house at lock No. 9, also repaired and shingled lock and wheel-houses at locks 5, 6, 7 and 8.

Leaks.

Sunday night, May fourth, a bad leak occurred in the culvert at Smith's brick-yard, and detained navigation about twenty-five days; also about forty feet of towing-path went out near bridge No. 11, but it was promptly repaired with but little detention to navigation.

RECOMMENDATIONS.

Structures that should be rebuilt. Bridge No. 8, on the three and three-quarter mile level; bridge No. 11, on the three and three-quarter mile level; bridge No. 16, on the three and three-quarter mile level; bridge No. 17, on the four-mile level; bridges Nos. 41 and 42, on the sixteen-mile level; bridge No. 49, on the sixteen-mile level; bridge No. 59, on the sixteen-mile level; lock-gates in locks Nos. 1, 5, 6, 7, 8 and 10.

I would respectfully recommend that something be done to lock No. 6; it is so small that boats have great difficulty in entering, sometimes taking four and five hours to lock them; this lock has delayed navigation more or less all summer, and should be taken up and rebuilt.

Respectfully.

JAMES DOUGREY,

Superintendent Canal Repairs.

SECTION No. 2, CHAMPLAIN CANAL — JOHN J. CUNNINGHAM, *Supt.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of John J. Cunningham, Superintendent of Repairs of twenty-four miles of the Champlain canal, extending from river lock to Dunham's basin, including Glens Falls feeder, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.
Locks	19	....
Lock tending (exclusive of oil)	....	$5,594 00
Lock-gates	63	....
Aqueducts	3	....
Waste-weirs	5	....
Culverts	9	....
Sluice ways around locks	8	....
Farm bridges (wood)	14	....
Road bridges (wood)	24	....
Road bridges (iron)	5	....
Tow-path bridges (wood)	5	....
Tow-path bridges (iron)	2	....
Foot bridges (wood)	19	....
State scows	2	....
Collector's office	1	....
Ice-breakers	2	....
Spillway	1	....
Lock-houses	16	....
Workshops	1	....
Timber-sheds	2	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	2,739 60
Dams (900 feet)	1	....
Watching canal	....	1,022 00
Other works of consequence which does not come under any of the above heads, viz.:		
Carpenters	....	622 60
Abstracts	....	17 25
Superintendent's salary	....	842 74
Total	....	$10,838 19

SECTION No. 2, CHAMPLAIN CANAL — JOHN H. GANLEY, *Supt.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditure, and the cost of each, on the line of the canal under the charge of John H. Ganley, Superintendent of Repairs, of twenty-four miles of the Champlain canal, extending from foot of first lock north of Saratoga dam, to Dunham's basin, including Glens Falls feeder, feeder dam and pond above, during the* 191 *days ending September*, 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total, new and old.
Locks	19	....	$164 50	$164 50
Lock tending (exclusive of oil)	.....	....	6,371 94	6,371 94
Lock-gates	63	$175 00	586 05	761 05
Aqueducts	3	....	147 80	147 80
Waste-weirs	5	....	26 40	26 40
Culverts	9	....	....	....
Sluice-ways around locks	8	....	61 00	61 00
Bridges of all kinds.		450 00	444 17	894 17
Farm bridges (wood)	14			
Road bridges (wood)	24			
Road bridges (iron)	5			
Tow-path bridges (wood)	5			
Tow-path bridges (iron)	2			
Foot bridges (wood)	19			
State scows	2	....	....	....
Collector's office	1	....	....	....
Ice breakers	2	....	....	....
Spillways	1	....	....	....
Lock-houses	16	....	....	....
Workshops	1	....	....	....
Timber-sheds	2	76 00	....	76 00
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	.....	....	4,605 70	4,605 70
Cleaning out bottom of canal during spring repairs	.....	....	1,447 75	1,447 75
Dams (900 feet)	1	....	....	....
Slope wall	.....	....	230 72	230 72
Docking	.....	265 00	326 62	591 62
Repairs of breaches	.....	....	167 19	167 19
Watching canal	.....	....	2,165 73	2,165 73
Other miscellaneous expenditures	.....	....	465 00	465 00
Other works of consequence which does not come under any of the above heads, viz.:				
Superintendent's salary	.....	....	....	657 26
Total	.....	$966 00	$17,210 57	$18,883 83

October 1, 1890.

JOHN H. GANLEY,
Superintendent.

Locks.

The following improvements have been made upon locks in this section:

The well and the new miter-sill at Fort Edward lock have been repaired; the well to tumble-gate at lock No. 11, Glens Falls feeder, has been replanked, a new bucking-beam inserted and the breast wall and chains, rods and valves to tumble-gate thoroughly repaired; new culvert frames have been put into locks Nos. 7 and 9; jaws to lock No. 4 have been cut off, and a new bucking-beam has been placed in Fort Miller lock. Other necessary repairs have also been made. Total cost, $164.50.

Lock-gates.

During the past season three new gates have been put into the following locks, viz.: Guard-lock, two lower gates; No. 4, lower heel-path gate; and lock at Moses kill, lower heel-path gate.

Two new balance-beams have been inserted at lock No. 5, two at five combined locks, one at lock No. 9, one at Fort Edward lock, and one at Bassett's lock. A new toe-post has been set in Fort Edward lock, and one in Moses kill lock. A new heel-post has been put in at locks Nos. 6 and 9, and at Bassett's lock. Two new wickets and two valves have been placed in lock No. 9, and two wickets at two combined locks. The lower-gates lock, No. 4, and the upper-gates guard lock have been replanked. Three new arms have been inserted at lower heel-path-gate lock No. 10, and two new crabs for forcing gates at guard-lock head of Glens Falls feeder.

The repairs on lock-gates during the past year have been quite extensive, most of the gates being old and in bad condition. Several of these gates are to be replaced with new ones before the opening of navigation, 1891. All have been repaired in a thorough manner and kept in working order at a total cost of $761.05.

Aqueducts.

The Fort Edward and Moses kill aqueducts, recommended in last annual report to be rebuilt, are unsafe, and ought to be rebuilt before the opening of another season of navigation. These aqueducts were repaired and strengthened during the spring repairs to insure their safety through the past season. Cost of repairs, $147.80.

Waste-weirs.

A new frame to bulkhead has been inserted at Crocker's waste-weir upon the three-mile level. Cost of same, twenty-six dollars and forty cents.

Sluiceways around locks.

As stated in the preceding annual report, the sluiceways around locks Nos. 12 and 13, Glens Falls feeder, are in bad condition and are not sufficiently safe for another season. They have been strengthened, however, at a cost of sixty-one dollars.

Tow-path and berme banks.

At the opening of navigation the tow-path, for nearly the entire length of the section, was in bad condition. The high tow-path embankment, opposite to Bell's five-mile level, and which separates canal and river for a distance of 2,000 feet, began to slide early in the season, and sank from the wall to such an extent that the tow-path was at times below water level. I was obliged to keep one scow and crew there most of the time for filling in, and also to put in tile to drain water that worked through the wall and tow-path. This piece of wall will have to be thoroughly pointed before the opening of navigation, 1891. At Metcalf's, five-mile level, the tow-path bank sank so deep that I was obliged to put in timber crib, seventy-five feet long, filled with stone. On the one, two, three, five and twelve-mile levels and at the Glens Falls feeder, the tow-path and berme embankments have been raised and strengthened, and slate has been put on tow-path where needed. Total cost of work, $4,605.74.

Cleaning out bottom of canal during spring repairs.

The past winter having been an open one and followed by heavy spring freshets, large bars formed on all the levels, and earth and stone slid in from high embankments. The bars and the earth and stone were removed at a cost of $1,447.75.

Docking.

The docking for 300 lineal feet in pond at head of guard-lock, Glens Falls feeder, has been rebuilt and all other docking on section has been kept in good repair. Total cost of improvements, $591.62.

Stone wall.

Several parts of stone wall, owing to original faulty construction, fell into the canal during the spring at the Glens Falls feeder and on the five-mile and twelve-mile levels. Cost of repairs, $230.72.

Leaks.

At Sherman's lime kilns, Glens Falls feeder, where a vertical wall was put in during last winter and the rock bottom of canal blasted out, when the water was let in it worked through seams in bottom and out under the wall and undermined the tow-path. The seams down to bottom have all been cleaned out and filled with concrete, the tow-path and the bottom of canal filled in with gravel, thereby almost effectually stopping the leak. Some leaks have occurred at lock No. 8 and at Crocker's waste-weir upon the three-mile level. Repairs have been made where leaks were found and there has been no detention to navigation. Total cost of repairs, $167.19.

Lock tending.

Competent men have been employed to take charge of the locks on this section during the past season at a total cost of $6,371.94.

Watching canal.

Faithful watchmen have daily and nightly been employed to watch the high and dangerous embankments, and through their vigilance and care no break has occurred on this section. Cost of hire, $2,165.73.

Bridges.

During the past season the following five new bridges have been framed and erected, viz.: Road bridge, iron chords, No. 1, Glens Falls feeder; road bridge, iron chords, No. 71; road bridge, iron chords, No. 78; farm bridge, wooden chords, No. 72; farm bridge, wooden chords, No. 79, and a new foot bridge across Saratoga discharge lock. I have re-planked the Glens Falls iron bridge and the roadway over aqueduct in Main street, Fort Edward; re-planked and placed new straining-beam in the bridge over old feeder at the head of Main street, Fort Edward; fixed new needle-beam in bridge No. 70, and fastened with chains, turnbuckle, etc., the berme abutment to the change bridge, at head of Glens Falls feeder, to prevent the abutment from falling into the feeder. This abutment will have to be rebuilt before another season of navigation. All the other bridges have had necessary repairs, and I have graded and put slate on the approaches. Total cost of repairs, $894.17.

Sunken boats.

Three boats have sunk on section during the season, stopping navigation at Glens Falls feeder for sixty-six hours.

On July twenty-first, the boat "Esther" sprung a leak and sank at Bassett's lock upon the one-mile level. The boat was pumped out and assisted to the Fort Edward dry dock. August fifteenth, the coal plug "Eddie of Kingston," loaded with stone, burst the bottom while in the two combined locks, and the stone dropped out and completely filled the well of lock. With the help of a diver, the stone was gotten out, and boat was floated back into basin, where it now lies worthless.

Depth of water.

A depth of at least five feet of water has been maintained on lower miter-sill at each lock during the past season.

Delays to navigation.

No delay to navigation has occurred on this section, except that already specified as having occurred at Glens Falls feeder, and which was caused by the sunken coal plug "Eddie."

Structures necessary to be rebuilt or repaired.

Bridge No. 71, lower Greenwich road, and the road bridge over old feeder at upper end Main street, Fort Edward, are in bad condition and need to be replaced by new ones. They are both on main thoroughfares where traffic is heavy, and the Fort Edward bridge is crossed by a street railway. The berm abutment to change bridge, upper end Glens Falls feeder, now stayed with chains, turnbuckle, etc., I fear will fall into the feeder. It will have to be rebuilt before the opening of another season.

Owing to original poor construction, portions of the vertical wall on the berme side of the canal, from Montgomery's slip at Fort Edward to the Argyle change bridge, thence on the tow-path side to bridge No. 96, are continually falling into the canal, and a large part of this wall should be relaid. Also a part of the vertical wall on tow-path side above Fort Edward lock needs to be rebuilt for a distance of about 300 feet.

Many places on the one, two, three and five-mile levels should be bottomed out to a uniform width of thirty-five feet, thereby allowing loaded boats to pass and avoiding wedges and detention to navigation.

The partition wall at feeder dam, for some 125 feet, was thoroughly repaired and pointed during the spring repairs, but these precautions seem to have been ineffectual as the water works through quite freely at the present time. This wall ought to be taken down during the coming winter and relaid.

State scows.

The two State scows on this section are old and in very bad condition. They will need to be thoroughly overhauled before they can be regarded as safe for another season.

I would recommend the purchase of a new scow instead of expending any sum of money on scow No. 1.

I am pleased to report that, so far as I can learn, your management receives the hearty indorsement of boatmen, forwarders and all others interested in the navigation and welfare of our State canals.

I am your obedient servant.

JOHN H. GANLEY,
Superintendent.

FORT EDWARD, *October* 1, 1890.

SECTION No. 3, CHAMPLAIN CANAL — SYLVESTER MAHAN, *Supt.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditure, and the total cost of each, on the line of the canal under the charge of Sylvester Mahan, Superintendent of Repairs of twenty-two miles of the Champlain canal, extending from Dunham's basin to Lake Champlain, during the fiscal year ending September* 30, 1890.

STRUCTURE OR WORKS, ETC.	Whole number on section.	Total new and old.
Locks	8	$955 00
Lock tending (exclusive of oil)	....	5,881 00
Lock-gates	26	....
Waste-weirs	9	118 00
Change bridges, combination	3	1,247 00
Farm bridges (wood)	17	
Farm bridges (iron), combination	1	
Road bridges (wood)	5	
Road bridges (iron)	8	
Tow-path bridges (wood)	1	
Tow-path bridges (iron)	0	
Foot bridges (iron)	1	
State scows	2	....
Ice-breakers	2	....
Lock-houses	4	....
Storehouses	2	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	5,571 00
Cleaning out bottom of canal during spring repairs	....	2,578 65
Watching canal	....	1,670 00
Watching State property	....	360 00
Other work of consequence which does not come under any of the above heads, viz.:		
Publishing abstracts	....	38 25
Superintendent's salary	....	1,500 00
Total	....	$19,919 10

Locks.

During the month of April the locks on this section were well pointed up and the bottom and wells cleaned out. At lock 16 the bottom was taken out, and concreted, grouted and repaired as best we could; it looks as if it may last another season, but it must be repaired somewhat next spring, and before long, will have to be rebuilt.

Lock-gates.

The lock-gates were repaired as their condition required during the past season. There will have to be a new set of upper gates at lock 19, also a new miter-sill, as the old ones are in a bad condition.

Waste-weirs.

The waste-weirs on this section were all more or less repaired before opening the canal this season.

Culverts.

The culverts were all cleaned out and some repairs made to put them in order for the opening of the canal.

The Walker culvert in the village of Whitehall, north of the change bridge, is not in good order and it should be relaid before some accident happens at that point.

Bridges.

All the bridges on this section have been kept in good order during the past season, and all have been painted two coats, in a thorough manner, except the old ones that are to be rebuilt the coming winter. The approaches have also been repaired and graveled.

New bridges.

During the summer the following new bridges have been built and put in position:

No. 105, farm bridge, Whipple combination; No. 108, farm bridge, Whipple, wooden; No. 113, farm bridge, Whipple combination.

Bridge No. 113 has just been finished, but has not been put in position.

The following bridges are be to built and put up as soon as possible:

No. 114, farm bridge, Whipple combination; No. 118, farm bridge, Whipple combination; No. 130, farm bridge, Whipple combination.

There is also to be made and put up a new double approach at east end and single approach at west end of change bridge No. 137½ in the village of Whitehall, as the old ones are all gone.

Tow-path.

The State boatmen having been laid off a part of the season of 1889 the tow-path has not as yet been brought up to its proper standard, but I am doing all that is possible to do with good gravel to put the same in a first-class condition.

Bottom of canal.

During the spring repairs the bottom of the canal was cleaned out and all the bars removed before canal opening.

Docking.

The docks have been repaired, where it was required, during the season, and the tow-path dock from the change bridge in the village of Whitehall south for about 300 feet has been put in new; also for about 300 feet south of lock No. 16 on twelve-mile level; also a portion at Comstocks was put in new.

Watching canal.

For the past year good men have been placed in the position of patrolmen for watching the canal, to prevent any breaks or any crowding of boats, and they have been very successful.

Sunken boats.

Five old boats sunk on this section during the season as follows: Two on five-mile level about three miles from Whitehall, sprung a leak; one at the narrows on Wood creek, ran against the rocks and sunk; one at Fort Ann on twelve-mile level; one at Smith basin on twelve-mile level. No great detentions were caused by these sunken boats, as every effort was made to get them out of the way as soon as possible, and navigation was not stopped for over six hours at any one time for sunken boats.

Water.

There has been no time this season when we had less than five feet of water, and the greater part of the time it was more, owing to heavy rains.

Navigation.

There have been no detentions during the season, except the slight detentions caused by high water in Wood creek, and by sunken boats. If a State inspector of boats were appointed, who would have authority to determine when a boat is not fit to navigate the State canals, it would prevent a great quantity of old shells such as are to-day running and sinking and causing detentions to other craft that are in good order.

Lock-houses.

The lock-houses have been painted. At lock No. 16, Fort Ann, a new house was built and painted.

State-house.

The State-house, or shop, at Whitehall has been painted and is in good order.

RECOMMENDATIONS.

I would most earnestly and respectfully recommend the following improvements, as they are necessary and should be done before the opening of the navigation of 1891: One new upper miter-sill in lock No. 23. To put this in will require a coffer dam and the water must be pumped out, as it is on the lake level. Two new upper lock-gates at lock 19; one new upper miter-sill at lock 19. The Walker culvert in the village of Whitehall should be rebuilt and enlarged, as it is in a leaky and bad condition and has not capacity enough to carry the water away as it should. To make a permanent and substantial job, the walls on the tow-path and berme side should be rebuilt for fifty feet each way from the culvert.

The waste-weirs on this section will require new planking and over-hauling in the spring to put them in good condition.

There should be about two miles of slope wall built on the five-mile level.

About one mile and a half of wall on tow-path side of Wood creek should be rebuilt this winter. There is also a portion of wall that needs to be repaired.

A few thousand dollars economically laid out would give seven feet of water on Wood creek for the seven miles.

About twelve new balance-beams should be put in this winter so as to be ready for next season.

The gates of nearly all the locks should be replanked and repaired, and a thorough overhauling given them during the winter.

SYLVESTER MAHAN,
Superintendent Section 3, *Champlain Canal.*

WHITEHALL, N. Y., *October* 1, 1890.

MIDDLE DIVISION.

OFFICE OF ASSISTANT SUPERINTENDENT OF PUBLIC WORKS,
SYRACUSE, N. Y., *December* 1, 1890.

HON. EDWARD HANNAN, *Superintendent of Public Works:*

DEAR SIR.— In compliance with the usual practice, I have the honor to submit herewith, my annual report as assistant superintendent of the middle division, New York State canals, to which position I was assigned January 16, 1890.

This division is comprised of three sections of the Erie, 5, 6 and 7, extending from the eastern line of Oneida county, west through the counties of Madison, Onondaga, Cayuga and Seneca, to the eastern bounds of Wayne county, a distance of little more than ninety-seven miles; two sections of the Black River canal, extending north from its junction with the Erie at Rome, to the village of Carthage in the county of Jefferson, a distance of about seventy-eight miles; two sections of the Oswego canal extending northeast from its junction with the Erie at Syracuse to Lake Ontario, at the city of Oswego, a distance of thirty-eight miles; the Cayuga and Seneca canal, extending from its junction with the Erie at Montezuma, southeasterly to Cayuga and Seneca lakes, a distance of twenty-three miles.

In addition to the above described canals, there are connected with the navigation of the Cayuga and Seneca, inlets and outlets to the lakes, covering a distance of two and one-quarter miles. The Oswego canal has eight and three-quarter miles of side-cuts; Seneca river towing-path, Mud Lock to Baldwinsville, a distance of five and three-quarter miles; Seneca river navigation from Baldwinsville to Jack's Reef (not used), eleven and three-quarter miles; and also the Oneida river improvement, extending from Three Rivers Point on the Oswego canal to Brewerton on Oneida lake, a distance of twenty miles. The Black River canal has thirteen and one-half miles of navigable feeders; connected with the Erie canal, there are side-cuts and feeders (navigable) covering five miles in distance.

The aggregate length of navigable canals and rivers upon the middle division, under my supervision, is 303 miles. The division also comprises forty-eight and one-half miles of artificial feeders supplied from twenty-five lakes and reservoirs, which have an aggregated area of 20,000 acres.

Within the limits of this division there are 159 locks, twenty-three aqueducts, 137 culverts, 148 waste-wiers and spillways, forty-two dams, 455 bridges and eight repair shops.

Owing to an unusual amount of rainfall during the present navigable season, much care and watchfulness have necessarily been exercised in looking after the banks and waste-wiers. I appreciate that all of my subordinates have manifested a special interest in this direction.

Upon the evening of Sunday, May twenty-fifth, last, a very serious break through the towing-path bank occurred at a point about one mile west of Whitesboro, on section 5, Erie canal. About seventy feet of the tow-path was carried away, and to the depth of from eight to ten feet below canal bottom. The prism of the canal for several rods upon either side of the break was also gullied out to the depth of several feet below bottom. But for the prompt and timely shutting off of the great body of water west of Oriskany, by placing a timber dam in the aqueduct at that point, a very much more disastrous and expensive result would have followed, as the entire body of water filling the level between Syracuse and Utica, a distance of fifty-six miles, would have rushed out through the openings and consequently increased its magnitude. Prompt measures were at once taken to repair the break, and by continuous day and night work, involving the employment of 500 men and 100 teams, the break was closed within one week. The delay to navigation covered a period of eight days for light boats and nine days for loaded boats. The expense of repairing the break amounted to a trifle over $8,500.

The cause of the break is generally attributed to the disturbance by unknown persons of a line of pump logs, prior to the opening of the canals, lying across the prism of the canal at that point, which were located there years ago, for the purpose of conveying water from a spring upon the southern side of the canal to the premises of private parties on the opposite side of the canal.

On the thirteenth day of June last a slight break occurred in the berme bank on section 5, Erie canal, at a point one and one-half miles west of Rome. The cut was about forty feet in length, and from one to two feet deep. An early discovery of this break was made and prompt and expeditious measures were taken to avoid further disaster and to put the banks again in good condition. The unusually heavy rains at that time, which filled the banks of the canal to their full capacity, and, in fact, at many points overflowed them, was the primary cause of the breach. There was no detention to navigation, and the expense of repairs was comparatively nominal.

On the same day of the above break, Whitehall's creek, a short distance east of Rome, broke through the earth approach south of the Greenfield road bridge, washing out a large amount of earth and gravel, quite an amount of which was carried into the canal, forming a bar, which caused some interruption to navigation. The division dredge was early brought into requisition, and the bar removed.

There has been expended upon this division during the last fiscal year, for ordinary repairs and maintenance, the sum of $70,616.38, of which amount the sum of $11,322.42 was disbursed by my predecessor, Hon. John Stebbins, and $59,293.96 by me. There has also been expended during the same period, under special enactments, the sum of $33,980.07, of which amount the sum of $5,995.12 was disbursed under the administration of Superintendent Stebbins, prior to January 16, 1890, and the sum of $27,984.95 was expended under my jurisdiction. The respective amounts disbursed by both Superintendent Stebbins and myself, and for the purposes paid out, are incorporated in a detailed statement hereto annexed.

Hall's culvert, located near lock No. 29, on section 1, Black River canal, has been a continuous source of trouble and expense during the present season; in fact, by reference to reports made by the former section superintendent, I find that this trouble extends back over a series of years. The outlet of the culvert leads into a mill-pond, whose dam operates to retard the flow from the culvert, and the fall of water therefrom seems to be entirely insufficient to keep the structure clear from the flood of earth, slate, and other material which is washed into it from the adjacent high lands during heavy rains. With a view of remedying this fault, and of avoiding further trouble and expense in this direction, I respectfully recommend the permanent appropriation of the adjacent mill-pond property, in order that the dam may be razed and the flow of the culvert stream increased to an extent sufficient to clear the structure from sediment and debris of all kinds.

By chapter 150, Laws of 1889, the Legislature made an appropriation of $6,000 for the repair of the second level on the Cayuga and Seneca canal at Seneca Falls, and the locks connected therewith. No work has ever been done, and none of the moneys expended under said act. The appropriation is still available, and will be until April 15, 1891. The improvements contemplated by said act are important and extremely necessary. I would earnestly recommend the prosecution of the work during the present close of navigation, as it is believed it can be easily and properly consumated before the life of the appropriation shall expire. If not deemed advisable to commence the work this winter I would suggest that the Legislature be requested to make a new appropriation, in order that the repairs may be done in the early future. In connection with this matter, I would urge the early repair of the river wall between locks Nos. 3 and 4 at Seneca Falls, as it is in very bad condition, and liable to give trouble and expense in the future, if not attended to.

The waste-wier, just east of Higginsville, has been a source of trouble and concern for the last several years, as I am informed through the engineer's department. The structure is weak and dilapidated and needs rebuilding entire. It is located upon the berme side of the canal, but when rebuilt it should be placed upon the opposite side, in order to relieve the culvert at that point from the flood of water that it is frequently necessary to waste there. The culvert at this point also needs attention and should be enlarged or an additional one built, for at times during heavy rains the present culvert is inadequate to carry away the full volume of water and the result is that it flows over the spillway into the canal, thus endangering the banks by an overflow. I would suggest a special appropriation to cover the expense of a new waste-wier and an additional culvert.

The Genesee street bridge at Utica, has been the object of much attention and concern during the present year, and it is clearly apparent that the structure requires important repairs and improvements. I would especially direct your attention to this matter as one of great importance to canal interests, as well as to the people of Utica.

The work of bottoming out the canals under special act, chapter 568, Laws of 1889, was commenced upon section 7, Erie, soon after the close of navigation last fall and prosecuted with good results during the entire winter and down to near the opening of the canals this spring. Upon other sections of the division the work was commenced early in April and followed up to the time of opening and letting in the water. The great improvement to navigation, as a result of the removal of large banks of silt and sediment from the prism of the canal, the accumulation of years, is a source of approving comment by boatmen generally, as well as by all others interested in the good management of the State's waterways. The work should be continued from year to year, until the canals are restored to their standard depth of seven feet.

The aggregate number of miles bottomed out on this division during the current year was twenty-four, divided as follows: Seventeen on section 5; two miles on section 6, and five miles on section 7, Erie canal. Over portions of the distance covered the deposit was comparatively light, while at other points the depth would reach from eighteen to thirty inches. The removal was principally from the towing-path side of the canal.

In addition to the deposit removal from section 7, there was nearly 1,600 feet of slope wall relaid and repaired, together with 110 lineal feet of vertical wall taken down and relaid. This work was made necessary by the discovery of underlying beds of quicksand, which made it very dangerous to leave these walls untouched, as they would be quite likely to give trouble and expense during the current year. There is about 100 lineal feet of vertical wall at the foot of lock No. 51, berme side which is in a dangerous condition and should be taken down and rebuilt during the coming close of navigation.

Under chapter 568, Laws of 1889, the following locks were lengthened and rebuilt: Lengthened locks, Nos. 9 and 10, Oswego canal; rebuilt locks, No. 12, Black River, and lock No. 8, on Cayuga and Seneca canal.

During the past year the sum of $1,001.55 has been expended upon the abandoned new Oneida Lake canal, in the way of improving road crossings, etc., under chapter 570, Laws of 1889.

Under chapter 240, Laws of 1889, there has been expended the sum of $4,750.20 in ditching and improving State ditches, adjacent to the canals.

From the ordinary repair and maintenance fund nearly every bridge structure upon the division has been painted and eight new wooden bridges have been built, several have received necessary repairs, while needed improvements and repairs have been made at Otisco Lake reservoir, DeRuyter reservoir, Cazenovia and Erieville reservoirs, as well as the Chenango reservoirs and outlets, whose water supply reaches the canal at Oriskany.

The several reservoirs are unusually well filled, and have been during the entire season.

Your attention is respectfully directed to the annual reports of the several section superintendents upon this division, which set forth the necessary repairs and improvements to be made during the coming close of navigation upon their respective sections.

I heartily concur in the several recommendations which are made.

Yours respectfully.

J. H. FLANAGAN,

Assistant Superintendent.

DETAILED STATEMENT *of expenditures on the middle division New York State canals by Hon. John Stebbins and Hon. James H. Flanagan, during their respective administrations as Assistant Superintendents of Public Works, for the fiscal year ending September* 30, 1890.

ITEMS.	Middle division.	Section 5, Erie.	Section 6, Erie.	Section 7, Erie.	Section 1, Oswego.	Section 2, Oswego.	Section 1, Black River.	Section 2, Black River.	Chenango.	Cayuga and Seneca.	Office expenses.	Totals.
Burying dead horses		$4 00	$10 00	$20 00								$34 00
Building and repairing bridges		921 50	1,237 73									2,159 23
Bridge tending										$26 00		26 00
Box rent and postage											$43 00	43 00
Castings	$35 70		523 96				$13 00					572 66
Coal	211 68		13 08							97 17	52 20	374 13
Cutting brush						$430 63						430 63
Clerk hire											1,200 00	1,200 00
Dredging on middle division	627 72											627 72
East Utica culvert		23 50										23 50
Electric lights on locks			176 60									176 60
Freight bills		72 42	53 26	8 88	$3 00	17 00	7 10	$15 89		45 30	7 00	229 85
Feeder tending			186 46									186 46
Gas											25 65	25 65
Hotel street bridge		26 17										26 17
Harbor master and light-house keeper										202 00		202 00
Janitress											210 00	210 00
Livery and team labor	42 00	40 20	193 15	8 40	3 00	2 00	666 90		$36 24			991 89
Looking after ice	122 50											122 50
Miscellaneous, blacksmithing	23 83	156 73	523 63	66 75	101 72	568 54	103 82	303 42	2 00	179 08		2,029 52
Miscellaneous, hardware	347 56	942 02	596 43	103 16	59 22	527 34	1,693 75	546 47	9 27	183 77		5,008 99
Miscellaneous, lumber	112 44	5,321 95	1,715 08	4,334 65	2,927 35	1,181 29	4,189 53	3,094 66	68 30	1,443 43		24,388 68
Miscellaneons, material		125 20		21 30		25 75				35 80		208 05
Miscellaneous, labor	1,640 94	708 02	358 96	97 18	307 10	66 08	3,852 41	184 93	320 15	724 06	19 20	8,279 03
Miscellaneous, expense		11 08	8 00		43 00		2 50			17 00		81 58
Oil, etc		16 21	29 35									45 56
Paint. brushes, oil, etc	57 41	926 28	626 35	179 33		58 52	33 73			48 09		1,929 71
Painting bridges		1,170 90	478 85	372 04	191 46					5 27		2,218 52
Pipe for State shop race						48 46						48 46
Printing											97 75	97 75
Repairs to Cowasalone aqueduct		269 87										269 87
Repairs to Broad street bridge		79 99										79 99
Repairs to starch factory culvert		337 50										337 50
Rope, etc	14 38	41 51	447 96	274 14	4 08	4 26						786 33
Repairs to John street bridge		96 57										96 57
Reservoir tending			685 00	130 92			18 00	360 00	770 36			1,964 28
Repairs to De Ruyter reservoir wall			160 60									160 60
Repairs to Canastota culvert			225 50									225 50
Repairs to Otisco lake reservior			38 80									38 80
Repairs to scows and supplies	22 10		78 61	9 35	13 36							123 42
Repairs to locks			43 50			15 00				5 00		63 50
Rubber boots			16 00				19 00					35 00
Repairs to Richmond aqueduct				194 05								194 05
Repairs to Oswego wall						284 25						284 25

Rent of scow						63 00						63 00
Repair wagon							135 00					135 00
Repairs to dredge								56 35				56 35
Rent of State shop								16 66				16 66
Repairs to tug	44 72											44 72
Repairs to dredge and dump scows	931 77											931 77
Stone, cement, sand, etc.		191 38	41 76			144 50	185 90	35 00	13 70	5 00		617 24
Stationery											88 41	88 41
Tow-path and banks		279 85	2,262 00	8 70								2,550 55
Telephone and telegraph		35 67		95		4 80	83 69	14 40			262 22	401 73
Tubing		23 71										23 71
Travel	156 48	20 75									27 70	204 93
Towing								80 00				80 00
Whitesboro break		8,560 91										8,560 91
Wheelbarrows				5 00								5 00
Water											34 15	34 15
Water watch	144 75											144 75
Totals	$4,535 98	$20,403 89	$10,730 62	$5,834 80	$3,653 29	$3,441 42	$11,004 33	$4,707 78	$1,220 02	$3,016 97	$2,067 28	$70,616 38

DETAILED STATEMENT *of extraordinary repairs expended by Hon. John Stebbins and Hon. James H. Flanagan, during their respective administrations as Assistant Superintendents of Public Works in charge of the middle division for the fiscal year ending September* 30, 1890.

	Chapter.	Year.	Amount.
Abandoned Erie canal at Rome, improving the sanitary condition of the same......	371	1888	$303 00
Bottoming out the Erie canal..............	568	1889	24,608 00
Ditching	240	1889	4,750 20
Inspectors of locks	568	1889	2,333 82
Inspectors of Utica wall...................	213	1889	308 00
Improving crossings, razing bridges, etc., on the abandoned new Oneida Lake canal,	570	1889	1,001 55
Inspector at Forestport dam.......	274	1889	360 00
Inspector of Oswego wall..................	568	1889	315 50
Total	....	....	$33,980 07

SECTION No. 5, ERIE CANAL—CHARLES GRAHAM, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of Charles Graham, Superintendent of Repairs of thirty-nine miles of the Erie canal, extending from east line Oneida county to Canastota, Madison county, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.
Locks	1	....
Lock tending (exclusive of oil)	....	$636 00
Lock-gates	8	....
Aqueducts	3	....
Waste-weirs	5	....
Culverts	38	....
Farm bridges (wood)		
Farm bridges (iron)		
Road bridges (wood)	86	314 25
Road bridges (iron)		
Tow-path bridges (wood)		6 10
Tow-path bridges (iron)		
State scows	2	....
Small boats	1	....
Ice-breakers	2	....
Lock-houses	1	....
Workshops	2	....
Watch-houses	4	....
Storehouses	1	....
Timber-sheds	1	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	2,632 75
Dams (452 feet)	4	....
Watching canal	....	357 45
Other work of consequence which does not come under any of the above heads, viz.:		
Publishing abstracts	....	13 28
Feeders	3	150 00
Superintendent's salary	....	842 74
Total	....	$4,952 57

SECTION No. 5, ERIE CANAL — JOHN W. MANLEY, *Superintendent.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditure, and the estimate cost of each, on the line of the canal under the charge of John W. Manley, Superintendent of Repairs of thirty-nine miles of the Erie canal, extending from east, line of Oneida county to Canastota, Madison county, during the* 190 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	1	$166 30	$166 30
Lock tending (exclusive of oil)	......	....	637 50
Lock-gates	8	....	....
Aqueducts	3	309 10	309 10
Waste-weirs	5	727 15	727 15
Culverts	38	113 07	113 07
Farm bridges (wood)	12	1,944 49	1,944 49
Road bridges (wood)	22		
Road bridges (iron)	48		
Tow-path bridges (wood)	3		
Tow-path bridge (iron)	1		
State scows	2	....	....
Small boat	1	....	....
Ice-breakers	2	....	....
Lock-house	1	....	....
Workshops	2	....	....
Watch-houses	4	....	....
Storehouse	1	....	....
Timber-shed	1	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	2,566 53
Cleaning on creeks and feeders	......	....	341 24
Slope wall	......	658 05	658 05
Watching canal	......	....	1,066 00
Other work of consequence which does not come under any of the above heads, viz.:			
Feeder tending	3	....	280 50
Lift-bridge tending	......	....	792 87
Publishing abstracts	......	....	21 51
Filing abstracts	......	....	50
Superintendent's salary	......	....	657 26
Total	......	....	$10,282 07

Cleaning out and bottoming of canal during spring repairs.

The canal was cleaned on both sides from the east line of section to lock No. 46; from lock No. 46 to Whitesboro road bridge No. 18; through Rome to Fort Bull, and on tow-path side from New London to Grove Spring; from bridge No. 51 to Dunbarton; from bridge No. 55 to Durhamville; and from bridge No. 59 to bridge No 60.

Locks.

Lock No. 46 was thoroughly repaired, and wells and aprons were concreted. New irons and bolts were put in where needed. The culvert was cleaned and replanked. Two new gates were also put in on the berme bank side.

Aqueducts.

Sauquoit creek aqueduct was replanked and the sides strengthened by new timbers.

Waste-weirs.

Teft's, Fort Bull and waste-weir west of Higginsville were thoroughly repaired, the masonry work being pointed up with cement.

Culverts.

Culverts on section which required cleaning were attended to and put in good order.

Culvert No. 2, near Clay street, Utica, was pointed up through the arch with cement.

The wing walls of culverts Nos. 28 and 29, on the tow-path side near Durhamville, were taken down and rebuilt and the same placed in good repair.

Bridges.

The following bridges have been replanked: Nos. 5, 6, 8, 10, 11, 14, 16, 21, 23, 27, 28, 35, 38. New sidewalks: Nos. 8, 13, 16, 37, 48. New needle-beams: No. 23. New floor joists: Nos. 8, 14, 23, 38. New iron pipe railing was placed on both sides of James street bridge, Rome. New plank and stringers were put on road bridge across the Oriskany feeder. The foot bridge across Sauquoit creek has been thoroughly repaired. All other bridges received careful attention and were repaired when found necessary. All the bridges on this section, with the exception of the one on Breeze street, have been neatly painted.

New bridges.

The following new bridges have been erected during the season: Christman's farm bridge, wood, No. 25, and No 33, road bridge, on berme bank; No. 49, Grove Spring, wood; No. 51, Happy Valley road, wood.

Feeders.

The Oriskany feeder and State dam, and also the Oneida feeder, were thoroughly cleaned of eel-grass during the season. Weeds also received due attention on this section and were cut in proper time.

Walls.

There were 700 feet of slope and vertical walls relaid from Gilbert street to First street, Utica; 300 feet were relaid from lock 46 to Rome; and 500 feet were relaid through Rome and west to Canastota.

Docking.

There were 44,795 feet of docking timber put in during the season on this section.

Tow-path.

The work of repairing the tow-path has received all necessary attention. Four and one-half miles of the tow-path at the lowest points have been raised with cinders and gravel, and at the present time the tow-path on this section is in a first-class condition. The berme bank has been repaired and strengthened wherever needed.

Watching canal.

Owing to the heavy rains and high water during the season, good and reliable men have been constantly employed to watch the banks and assist in navigation.

Breaches.

On Sunday night, May twenty-fifth, a disastrous break occurred near Whitesboro, carrying away about seventy feet of the tow-path and washing out about 300 feet of canal bottom to the depth of six feet. A large force of teams and men were kept constantly at work night and day until the same was substantially repaired. Navigation was delayed ten days.

Owing to heavy rains and high water a washout occurred on June thirteenth just west of Barnes' farm bridge, on the berme bank. By the timely efforts of the employés of the section an expensive break was prevented with little expense to the State.

On the same day, June thirteenth, a culvert, under the roadway near Greenfield's bridge, east of Rome, gave way and carried a large amount of stone and earth into the canal. This caused some trouble to navigation until the same was removed by a dredge.

RECOMMENDATIONS.

I would respectfully recommend that extensive repairs be made in the west arch of the Starch Factory creek culvert.

The center of the culvert at Clay street, Utica, should be taken up and rebuilt, and the work done at the close or before the opening of navigation.

Waste-weirs.

The waste-weir near Higginsville should be rebuilt, and I would earnestly recommend that new bulkheads be placed in all of the waste-weirs on this section, as the timbers and planking are rotten and unsafe.

Feeders.

The bulkhead in the feeder at Rome should be taken out and rebuilt. The feeder at Oneida should be thoroughly cleansed and the banks raised and strengthened where needed, as much complaint is made when the water is high concerning the overflow. This work should be done before the opening of navigation.

Bridges.

Genesee street bridge, Utica, should be rebuilt the coming winter, as the old structure is unsafe for the heavy traffic which passes over it.

Also a new foot bridge should be erected at Breeze street, Utica, as the one there at present is unsafe and has been closed up.

Also a new road bridge should be erected at Shallhammer's road.

J. W. MANLEY,
Superintendent.

SECTION No. 6, ERIE CANAL — ROBERT R. OSMOND, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of Robert R. Osmond, Superintendent of Repairs of thirty-three miles of the Erie canal, extending from Canastota to and including Camillus, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total new and old.
Locks	4	$146 45	$93 60	$240 05
Lock tending (exclusive of oil)	......	....	2,928 00	2,928 00
Lock-gates	......	....	88 80	88 80
Aqueducts	4	....	....	....
Waste-weirs	5	....	57 00	57 00
Culverts	15	....	....	....
Weigh-locks	1	....	....	....
Farm bridges (wood)	7	72 25	....	72 25
Farm bridges (iron)	1	....	135 00	135 00
Road bridges (wood)	14	....	....	....
Road bridges (iron)	22	....	11 00	11 00
Tow-path bridges (wood)	2	....	....	....
Tow-path bridges (iron)	1	....	....	....
State scows	2	....	....	....
Ice-breakers	2	....	....	....
Lock-houses	4	....	....	....
Workshops	1	....	....	....
Watch-houses	2	....	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	342 00	342 00
Dams (963½ feet)	7	....	72 40	72 40
Docking	......	....	503 00	503 00
Watching canal	......	....	610 00	610 00
Other work of consequence which does not come under any of the above heads, viz.:				
Publishing abstracts	......	....	17 82	17 82
Transferring material	......	....	40 45	40 45
Repairs to Jamesville reservoir house	......	....	38 40	38 40
Securing State property for winter	......	....	78 45	78 45
Measuring lumber	......	....	14 70	14 70
Superintendent's salary	......	....	842 74	842 74
Total	......	$218 70	$5,892 56	$6,111 26

SECTION No. 6, ERIE CANAL — DANIEL BOOKSTAVER, *Superintendent.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of D. Bookstaver, Superintendent of Repairs of thirty-three miles of the Erie canal, extending from Canastota to and including Camillus feeder, during the fiscal year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total cost, new and old.
Locks	4	$1,301 65	$1,301 65
Lock tending (exclusive of oil)	....	....	4,943 77
Aqueducts	4	....	....
Waste-weirs	5	....	....
Culverts	15	....	....
Weigh-locks	1	....	....
Farm bridges (wood)	7	216 50	216 50
Road bridges (wood)	14	36 00	36 00
Road bridges (iron)	22	814 00	814 00
Tow-path bridges (wood)	2	....	....
Tow-path bridge (iron)	1	....	....
State scows	2	....	....
Ice-breakers	2	....	....
Lock-houses	4	33 00	33 00
Workshop	1	....	....
Watch-houses	2	....	....
Storehouses	2	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	598 74	598 74
Dams (933 72-100 feet)	7	44 70	44 70
Docking	....	646 15	646 15
Watching canal	....	1,090 00	1,090 00
Wheelbarrows	70	... .	....
Other work of consequence which does not come under any of the above heads, viz.:			
Cutting grass	....	....	267 89
Transferring and piling lumber	....	....	262 19
Building vertical wall at Fayetteville and Manlius Center	....	....	697 85
Publishing and filing abstracts	....	....	28 75
Superintendent's salary	....	....	657 26
Total	....	....	$11,638 45

D. BOOKSTAVER,
Superintendent.

Locks.

The four locks on this section had a thorough overhauling during spring repairs, and were all put in good condition. The lock-houses and balance-beams repainted and the machinery overhauled and repaired, so that the same have been in good running order during the whole season of navigation without any material interruption.

Aqueducts.

Butternut and Limestone aqueducts each had a small portion of flooring done.

Culverts.

Have all been in good order and no material repairs have been deemed necessary.

Waste-weirs.

The waste-weirs are all in good condition and no repairs needed beyond being thoroughly cleaned.

Bridges.

Stern's bridge has been rebuilt and all the other bridges have received the needed repairs, such as planking, etc.

Docking.

There have been 36,000 feet of docking, board measure, relaid at different points along the section where it was deemed necessary for safety of navigation.

Slope and vertical walls

Have received all necessary repairs on the entire section, and about 2,000 feet of vertical wall have been relaid at Manlius Center and Fayetteville.

Spring repairs — bottoming out canal.

Bottomed out about two miles on the Syracuse level and what was deemed necessary at Chittenango for perfect navigation.

Tow-path.

Between Canastota and lock 50, two miles of tow-path have received a covering of gravel.

Banks

Have received needed repairs and been strengthened where there was any appearance of weakness.

Depth of water over mitre-sills

Has been fully seven feet during the entire year.

Structures necessary to be rebuilt or repaired.

Lock No. 47 needs two new sets of check studs and hollow quoins; also lock No. 48 needs two new sets of check studs and hollow quoins.

Lock No. 50 needs two new lower gates in tow-path lock.

Weigh-lock needs four new balance-beams.

Bulkhead feeder at Chittenango needs new timbering, and Chittenango bridge needs new floor timbers and replanking and new coping.

Kirkville bridge needs partly new timbering and replanking.

Pool Brook waste-wiers will have to be retimbered.

Manlius Center bridge will require new beams and flooring.

Butternut creek aqueduct needs new sides and bottom.

Orville feeder bridge will need new planking.

A new scow for the use of section 6 will be necessary, as the present scow, "City of Syracuse," is so rotten it is with difficulty it has been kept afloat during the season.

D. BOOKSTAVER,
Superintendent.

SECTION No. 7, ERIE CANAL — JOHN D. SPAULDING, *Superintendent.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditures and the cost of each, on the line of the canal under the charge of John D. Spaulding, Superintendent of Repairs of thirty-one miles of the Erie canal, extending from west bank of Camillus feeder to east line of Wayne county, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	4	....	....
Lock tending (exclusive of oil)	......	$1,464 00	$1,464 00
Lock-gates	20	....	....
Aqueducts	5	....	....
Waste-weirs	3	....	....
Culverts	21	....	....
Farm bridges (wood)	5	77 65	77 65
Farm foot-bridge (iron)	1		
Road bridges (wood)	10		
Road bridges (iron)	12		
Tow-path bridges (wood)	2		
State scow	1	....	....
Small boat	1	....	....
Ice-breaker	1	18 89	18 89
Lock-houses	2	....	....
Workshop	1	....	....
Watch-houses	2	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	610 86	610 86
Cleaning on creeks and back ditching	......	84 14	84 14
Dams (257 feet)	4	....	....
Docking	......	57 07	57 07
Watching canal and feeders	......	753 58	753 58
Other work of consequence which does not come under any of the above heads, viz.:			
Handling and staking lumber	......	111 10	111 10
Handling and staking lumber at State yard	......	37 66	37 66
Running section	......	35 55	35 55
Publishing abstracts	......	10 50	10 50
Superintendent's salary	......	842 74	842 74
Total	......	$4,103 74	$4,103 74

SECTION 7, ERIE CANAL — JOSIAH H. HAMILTON, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditure, and the total cost of each, on the line of the canal under the charge of Josiah H. Hamilton, Superintendent of Repairs of about thirty-one miles of the Erie canal, extending from west bank of Camillus feeder to Wayne county east line, during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total, new and old.
Locks	4	$250 70	$250 70
Lock tending (exclusive of oil)	......	....	2,550 00
Lock-gates	20	....	....
Aqueducts	5	....	....
Waste-weirs	3	....	....
Culverts	21	....	....
Farm bridges (wood)	3	....	....
Farm bridges (iron)	1	....	....
Road bridges (wood)	10	....	....
Road bridges (iron)	12	....	....
Tow-path bridges (wood)	2	....	....
Tow-path bridges (iron)	......	239 27	239 27
State scows	1	16 50	16 50
Small boats	1	....	....
Ice-breakers	1	....	....
Lock-houses	2	....	....
Workshops	1	....	....
Watch-houses	2	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	740 45
Dams (257 feet)	4	....	....
Slope wall	......	....	133 27
Repairs of breaches	......	....	76 50
Watching canal and feeders	......	....	773 50
Other work of consequence which does not come under any of the above heads, viz.:			
Handling and drawing lumber	......	....	159 50
Scraping tow-path	......	....	35 00
Publishing and filing abstract	......	....	19 75
Cleaning up section in spring	......	....	42 70
Back ditching, cutting weeds and eel grass and setting snubbing-posts	......	....	465 02
Helping sunken dredge and taking care of water	......	....	72 30
Superintendent's salary	......	....	657 26
Total	......	....	$6,231 72

Locks.

The locks were repaired in the spring.

Bridges.

Bridges 135 and 137 have been replanked and other bridges on the section have been repaired.

Raising and repairing tow-path and berme bank.

There have been 7,000 feet of berme and tow-path raised this season.

Slope wall.

There have been 740 feet of wall raised on berme side of canal.

Docking.

Has been laid for 440 lineal feet.

Feeders.

The Port Byron feeder has been cleaned from eel grass, and from Jordan feeder the obstructions have been removed.

I would call your attention to the water main leading from Port Byron feeder to the canal as the same leaks badly.

Dams.

The dams on the section have received all necessary repairs.

Breaches.

We have had three breaches in the berme bank which, by timely attention, were secured without incurring any extra expense.

The weeds have been mowed on both sides of the canal twice the present season.

All sluices have been properly repaired and snubbing-posts set at various points.

There has been an abundance of water to maintain good navigation throughout the season.

There has been a detention of navigation for light boats for six hours and for loaded boats twenty-two hours, in consequence of a sunken dredge at Centerport.

The State scow, the Hon. John Stebbins, is wholly unfit for canal purposes, and should be replaced with a new one.

Structures necessary to be rebuilt.

Lock No. 51. Needs one new lock-gate, a new pier at the head of lock or the old one rebuilt, and a new frame for machinery at head of lock, one new balance-beam and tow-post on heel-path lock at head of lock.

Lock No. 52. One new lock-gate.

Bulkhead.

The bulkhead at Weedsport waste-weir needs rebuilding.

Bridges.

Bridges 117, 123, 124, 140 and 144 need rebuilding.

Aqueducts.

Jordan aqueduct needs rewooding and the timber is on hand for the purpose. Centerport, Crane brook and Richmond aqueducts need repairing.

Bridges 133, 135 and 136 should have new coping and foundation timber for the same, for they are very unsafe.

JOSIAH H. HAMILTON,
Superintendent.

Dated WEEDSPORT, *October* 6, 1890.

SECTION No. 1, BLACK RIVER CANAL — PETER PHILLIPS, *Supt.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of Peter Phillips, Superintendent of Repairs of thirty-seven and one-half miles of the Black River canal, extending from Rome to two miles above Forrestport, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total new and old.
Locks	73	....	$1,283 45	$1,283 45
Lock tending (exclusive of oil)	......	....	5,002 00	5,002 00
Lock-gates	276	$364 00	197 00	561 00
Aqueducts	6	....	....	....
Waste-weirs	9	....	305 25	305 25
Culverts	12	....	....	....
Farm bridges (wood)	18	....	....	....
Road bridges (wood)	23	....	180 36	180 36
Tow-path bridges (wood)	8	....	....	....
Tow-path bridge (iron)	1	....	....	....
State scows	1	....	....	....
Small boats	2	....	....	....
Lock-houses	23	135 80	100 95	236 75
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	.....	....	403 27	403 27
Cleaning out bottom of canal	......	....	41 77	41 77
Slope wall	.....	166 66	178 50	345 16
Watching canal	......	....	610 00	610 00
Other work of consequence which does not come under any of the above heads, viz.:				
Repairing North lake roads	......	....	429 50	429 50
Delivering lime along canal	......	....	83 54	83 54
Reservoir tending and messenger	......	....	683 67	683 67
Clipping side of lock No. 1	......	....	25 50	25 50
Publishing abstracts	......	....	25 38	25 38
Superintendent's salary	......	....	842 74	842 74
Total	......	$666 46	$10,392 88	$11,059 34

PETER PHILLIPS,
Superintendent.

SECTION No. 1, BLACK RIVER CANAL — G. C. WARD, *Superintendent.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditure and the total cost of each, on the line of the canal under the charge of G. C. Ward, Superintendent of Repairs of thirty-seven and one-half miles of the Black River canal, extending from Rome to the foot of lock No.* 71, *at Boonville, and including Forrestport and Delta feeders, during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total new and old.
Locks	73	....	$2,489 69	$2,489 69
Lock tending (exclusive of oil)	......	....	5,948 16	5,948 16
Lock-gates	276	604 40	626 25	1,230 65
Aqueducts	6	....	26 50	26 50
Waste-weirs	9	....	74 57	74 57
Culverts	12	....	81 94	81 94
Farm bridges (wood)	18	....	392 62	392 62
Road bridges (wood)	23			
Road bridges (iron)	8			
Tow-path bridge (iron)	1			
State scows	1	....	21 75	21 75
Small boats	2	....	....	....
Lock-houses	23	74 00	101 89	175 89
Workshops	2	....	....	....
Piling machines	1	....	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	925 39	925 39
Cleaning out bottom of canal during spring repairs	......	....	4,919 45	4,919 45
Dams	......	....	2 50	2 50
Docking	......	....	187 59	187 59
Watching canal	......	....	966 64	966 64
Other work of consequence which does not come under any of the above heads, viz.:				
Removing bars	......	....	199 39	199 39
Boating lumber	......	....	40 24	40 24
Reservoirs	......	....	745 00	745 00
Publishing abstracts	......	....	49 75	49 75
Superintendent's salary	......	....	657 26	657 26
Total	......	$678 40	$18,456 58	$19,134 98

Locks.

Necessary repairs were made on all locks before the opening of navigation, especially below water line. Locks Nos. 42, 43, 47, 54, 56, 58 and guard-lock at Forestport were pointed with cement. The wing walls of locks Nos. 1, 18 and 55 have settled badly and were thoroughly dressed off during spring repairs. Lock No. 1 has been dressed off several times since, but still has been the source of much trouble. Also the walls of Nos. 13, 37 and 40 were dressed off. The bottoms of many locks were relined and mitre-sills inserted where necessary. The foundation under lock No. 30, tow-path side, was found to be in an unsafe condition and was promptly attended to by raising, concreting and relining, and has caused no trouble since. Sluices around nearly all the locks have been repaired by new docking, aprons, etc. The banks around as many locks as possible have been raised and repaired with gravel and slate. This work will be continued the remainder of the season.

Lock-gates.

Whenever practicable old gates have been repaired. Fifteen new gates have been inserted as follows: One each at Nos. 1, 27, 44, 48, 62 and 65; two each at Nos. 30, 52 and 68, and four at No. 12.

Aqueducts.

Milk creek aqueduct is considerably rotted and unsafe, for which timber has been delivered to rebuild. The aqueducts have all received the necessary repairs during the season.

Waste-weirs.

The aprons and walls at Lee and Pitcher waste-weirs on Forestport feeder were rebuilt. Bridge over waste-weir at Forestport was rebuilt and others were replanked where necessary.

Culverts.

The outlet to Hall's culvert, near lock No. 29, has been filled three times since navigation opened. Something should be done to prevent this.

Lock-houses.

Houses at Nos. 12, 29, 33, 46, 71 were reshingled and generally repaired suitably for occupants. New houses have been rebuilt at Nos. 61, 65 and 68. Three more should be rebuilt next season,

Bridges.

All bridges have been kept in good repair by replanking, painting, putting in new floor timbers and abutments, and by raising and repairing the approaches with slate and gravel.

State scow.

The State scow has been repaired several times this season but is in a dilapidated condition and should be replaced with a better scow.

Cleaning prism.

The rains of last winter caused a deposit of a large quantity of earth, which not only collected in bars but overran the prism. The bars were all removed and some levels taken out to canal bottom. But many levels are from six to eight inches high and should be taken down next spring. The small streams running into the canal just below lock No. 25 have caused much trouble by washing in large bars several times this season. With a small expenditure of money future trouble could be avoided by turning the direction of the stream.

Miscellaneous.

Section No. 2 has been furnished with seven lock-gates, ironed.

Docking.

About 300 lineal feet of docking have been rebuilt on the tow-path side of the basin below lock No. 1 at Rome, also at the head of lock No. 12 and at locks Nos. 34 and 66, in order to protect tow-path. Repairs have also been made at the head of many other locks.

Navigation.

The required depth of water has been maintained during the season of navigation.

Reservoir and water supply.

Water was started from reservoir June twenty-eighth and run almost continuously until about the middle of August. It has not been necessary to draw any water since that time. The dam at North lake nearly broke away during the rains in September, therefore, something should be done to insure safety before the lake is again filled. New bulkheads were put in at Twin lake and Canchagala reservoirs. The spillway at Sand lake should be repaired and a new house should be built at Woodhull.

Recommendation.

I would earnestly recommend the rebuilding of locks Nos. 13, 18, 37 and 55 as they are in an unsafe condition and liable to fall in at any time. After these, there are at least ten more locks that should be rebuilt at an early date. I would also recommend the bottoming-out of canal to original bottom.

G. C. WARD,
Superintendent Repairs.

Dated at BOONVILLE, N. Y., *October* 1, 1890.

SECTION No. 2, BLACK RIVER CANAL — J. T. CAMPBELL, *Supt.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditure and the estimate cost of each, on the line of the canal under the charge of J. T. Campbell, Superintendent of Repairs of fifty-three and one-half miles of the Black River canal, extending from Boonville to Carthage, during the* 365 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	40	$545 90	$545 90
Lock tending (exclusive of oil)	......	4,757 80	4,757 80
Lock-gates	130	950 00	950 00
Aqueducts	1	....	....
Sluices	2	85 10	85 10
Culverts	7	....	....
Farm bridges (wood)	18	344 50	344 50
Road bridges (wood)	7	....	....
Road bridges (iron)	7	....	....
Tow-path bridge (wood)	1	....	....
State scow	1	....	....
Small boat	1	....	....
Boarding boat	......	98 00	98 00
Lock-houses	13	....	....
Bridge-houses	3	....	....
Raising and repairing tow-path and berme bank(not including repairs to slope walls.)	......	2,305 46	2,305 46
Cleaning out bottom of canal during spring repairs	......	1,028 00	1,028 00
Repairing docking, Illingsworth Bridge	......	63 40	63 40
Docking	......	238 75	238 75
Filling sink holes	......	65 50	65 50
Taking care of dredge	......	35 00	35 00
Tending dam, Old Forge	......	35 00	35 00
Other miscellaneous expenditures	......	3 00	3 00
Other work of consequence which does not come under any of the above heads, viz.:			
Bridge tending	......	1,090 00	1,090 00
Dredge force	......	937 50	937 50
Publishing abstracts	......	35 35	35 35
Notaries' fees	......	10 00	10 00
Superintendent's salary	......	1,200 00	1,200 00
Total	......	....	$13,828 65

Locks.

Prior to the opening of navigation, April 28, 1890, the locks were thoroughly examined, and all necessary repairs made. Locks Nos. 76, 80 and 93 were pointed with cement. The bottoms of most all of the locks were more or less repaired with new plank. Locks Nos. 76 and 77 of the County combines and lock 87 of the Malcolm combines had to be quite extensively repaired, on account of the timbers settling.

During this season and last fall, after October 1, 1889, locks 72, 76, 77, 81 and 93 were graded and filled in around the walls with gravel and stone, thus stopping the leakage. Early in the season, at lock 93 the water broke out under the chamber walls, and caused us considerable trouble and work to confine it. The sluices at locks 76, 80, 86, 95 and 102 were repaired, and 102 were mostly rebuilt.

Lock-gates.

All lock-gates are at present in good condition. The gates, 140 in number, were repaired before the opening of navigation, and put in the best possible condition. Since October 1, 1889, there have been ten old gates taken out and replaced by new ones, as follows: One in each of locks Nos. 86, 98, 99 and 100, and two each in locks Nos. 84, 104 and 106. There were five new gates on hand October 1, 1889, and I have received from superintendent of section No. 1 seven new ones this season, leaving two new ones on hand, 1st of October, 1890, which will be used during the fall.

Aqueducts.

The aqueduct at Sugar river is in good repair. The bridge was replanked and railing repaired.

Bridges.

The bridges on this section are in good repair except two; the tow-path bridge below lock 97, and B. Jones' bridge, above lock 92, will have to be rebuilt next season. All of the canal bridges, from lock 85 to Port Leyden, were painted during the month of September. The following bridges have been repaired: The Boonville bridge had new floor timbers put in, and was replanked; the Jackson and Jones bridges were replanked; the Kimball road bridge was repaired; Port's bridge, new bent, was replanked and approaches rebuilt; new sidewalks and floor timbers were put on Port Leyden road bridge, tow-path bridge below lock No. 97, and one span of Glendale bridge were replanked. New floor timbers were put on bridge below lock No. 101; built new sidewalk on Lyons Falls road bridge and repaired Moose river bridge. The swing-bridge at Illingsworth was repaired and replanked. Replanked swing-bridge at Castorland, and put new braces on east end of Main street bridge. The two wood spans at Castorland should be rebuilt the coming winter.

Towing-path.

The tow-path has been kept in good condition by grading and putting on gravel and lining the banks with same. On level between locks Nos. 91 and 92 there has been considerable work done; boating gravel and stone to line both sides of banks; driving sheet piling and laying walls to strengthen the bank.

Cleaning prism.

The prism of canal was well cleaned out and the bottom widened out on the Port Leyden level and on the level between locks Nos. 91 and 92.

Docking.

The docking on this section is in good repair. Before the opening of navigation there were 350 feet of new docking built at Port Leyden.

Dams.

The dam at Carthage, lock and dam at Burke's, and dam at Otter creek are in good repair. The lock at Otter creek is in a very poor condition and should be repaired. The dam at Lyons Falls and the dam at Old Forge are in good repair. The leak reported last year in the dam at Old Forge was repaired and gates put in this season.

Miscellaneous.

The dredge force has been employed since the first of June removing bars, cleaning out the locks on river and cleaning out the river wherever necessary. Twelve old miter-sills were taken out during the spring repairs and replaced by new ones, in the following locks: Nos. 73, 74, 75, 76, 79, 80, 85, 86, 87, 88, 89 and 90. There have been no delays of any length of time on the section. There have been two sunken boats, which were taken care of, causing no delay to navigation. Navigation has been good during the season. There has been sufficient water in both canal and river, and a depth of four feet of water has been maintained over each miter-sill during the season.

RECOMMENDATIONS.

I would respectfully recommend the following improvements the coming season: New tow-path bridge below lock 97; new farm bridge above lock 92; a new swing-bridge at Whittlesey's, and new swings at Glendale and Illingsworth, or the old ones extensively repaired, and two new spans of the main bridge at Castorland. The docking at the head of many of the locks ought to be repaired and some of them rebuilt before the opening of navigation. The lock-houses on the section need repairing and painting. Otter creek lock is in a very bad condition and needs a thorough overhauling.

J. T. CAMPBELL,
Superintendent.

SECTION 1, OSWEGO CANAL — JOHN LEAHEY, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of John Leahey, Superintendent of Repairs of about thirty-three miles of the Oswego canal, extending from Syracuse to the Three River point, including Seneca river, to tow-path and Baldwinsville canal, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number of section.	Cost of repairs of old, etc.	Total, new and old.
Locks	7	$45 50	$45 50
Lock tending (exclusive of oil)	......	1,566 00	1,566 00
Lock-gates	28	67 60	67 60
Waste-weirs and sluices	3	90 65	90 65
Culverts	......	16 00	16 00
Road bridges (wood)	11	74 75	74 75
Road bridges (iron)	5	94 89	94 89
Tow-path bridges (wood)	4	....	....
Tow-path bridges (iron)	1	53 50	53 50
Float bridges	1	....	....
State scows	1	....	....
Small boats	1	....	....
Ice-breakers	1	....	....
Under-water excavators	1	....	....
Lock-houses	4	12 80	12 80
Workshops	1	....	....
Timber-sheds	1	....	....
Piling machines	2	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	778 69	778 69
Dams (400 feet)	1	....	....
Docking	......	217 00	217 00
Watching canal	......	120 00	120 00
Other work of consequence which does not come under any of the above heads, viz.:			
Piling lumber	......	62 77	62 77
Sunken boat	......	32 00	32 00
Publishing abstracts	......	11 00	11 00
Superintendent's salary	......	674 19	674 19
Total	......	$3,917 34	$3,917 34

SECTION No. 1, OSWEGO CANAL — THOMAS O'BRIEN, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of Thomas O'Brien, Superintendent of Repairs of about thirty-three miles of the Oswego canal, extending from Syracuse to Three River point, including Seneca river towing-path and Baldwinsville canal, during the six months ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Total, new and old.
Locks	7	$317 75
Lock tending (exclusive of oil)	....	1,468 80
Lock-gates	26	53 55
Waste-weirs and sluices	3	146 00
Culverts	4	....
Road bridges (wood)	11	63 00
Road bridges (iron)	5	253 00
Tow-path bridges (wood)	4	....
Tow-path bridge (iron)	1	....
Float bridge	1	....
State scow	1	....
Ice-breaker	1	....
Under-water excavator	1	....
Lock-houses	4	....
Workshop	1	....
Timber-shed	1	....
Piling machines	2	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	938 14
Cleaning out bottom of canal during spring repairs	....	1,190 60
Dam (400 feet)	1	....
Docking	....	1,269 22
Watching canal	....	7 00
Wheelbarrows	88	....
Other work of consequence which does not come under any of the above heads, viz.:		
Boating and piling lumber	....	160 00
Cutting brush and weeds	....	172 44
Publishing abstracts	....	22 00
Recording abstracts	....	1 50
Notary public fees	....	1 50
Superintendent's salary	....	525 81
Total	....	$6,590 31

Bridges.

The following bridges have been newly replanked and retimbered where necessary:

Park street bridge in Syracuse.

James street bridge in Syracuse.

Baldwinsville bridge.

Repairs have been made to other bridges where it was deemed necessary.

Twelve bridges in Syracuse and Liverpool and the Baldwinsville bridge have been painted.

Locks.

The lock-gates were thoroughly repaired during the spring work.

During the spring repairs two (2) new upper gates were put in at lock No. 1.

For the season of 1891 the following will be required:

Two (2) new gates for guard-lock at Baldwinsville.

Four (4) new gates for lock No. 5.

One (1) new tow-path gate at lock No. 1.

One (1) new tow-path gate at lock No. 2.

Three (3) new balance-beams.

The lock at Baldwinsville should be rebuilt. Four (4) new lock-gates will be necessary for the same.

All of the locks, except Baldwinsville lock, have been painted.

Docking.

Owing to high water in the spring the docking was found in a bad condition. Three thousand six hundred lineal feet of docking have been laid this season. At least 5,000 lineal feet of docking and 6,000 feet of ties will be required during the coming season.

Waste-weir and sluices.

The White and Collier sluices have been entirely rebuilt. Six other sluices along the Seneca river should be rebuilt the coming season.

Towing-path, etc.

The tow-path on Baldwinsville canal was raised and widened at some points. The necessary repairs have been made on both tow-path and berme bank along the remainder of the section.

Bottoming.

Syracuse level, short level and north side-cut were bottomed out during the spring repairs.

There are some bars on the Liverpool level that ought to be dredged before navigation opens next season.

Dams.

The Baldwinsville dam is unsafe and should be rebuilt.

Navigation.

Navigation has not been interrupted during the season. A depth of seven feet of water has been kept since navigation opened.

THOMAS O'BRIEN,
Superintendent.

SECTION No. 2, OSWEGO CANAL — L. T. RICHARDSON, *Supt.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of L. T. Richardson, Superintendent of Repairs of twenty-three miles of the Oswego canal, extending from Oswego to Three River point, also the Oneida river improvement, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total, new and old.
Locks	21	....	....	....
Lock tending (exclusive of oil)	......	....	$6,466 00	$6,466 00
Lock-gates	96	$254 00	242 47	496 47
Aqueduct	1	....	....	....
Waste-weirs	8	....	18 88	18 88
Culverts	4	....	....	....
Road bridges (wood)	6	....	29 89	29 89
Road bridges (iron)	5	....	....	....
Tow-path bridges (wood)	5	....	....	....
Tow-path bridge (iron)	1	....	....	....
State scows	2	....	....	....
Small boats	2	....	....	....
Lock-houses	17	....	....	....
Workshop	1	....	....	....
Timber-shed	1	....	56 33	56 33
Raising and repairing tow-path and berme bank (not including repairs to slope-walls)	......	....	563 93	563 93
Docking	......	....	18 88	18 88
Watching canal	......	....	149 75	149 75
Other miscellaneous expenditures	......	....	56 65	56 65
Other work of consequence which does not come under any of the above heads, viz.:				
Publishing abstracts	......	....	17 50	17 50
Piling timber	......	....	75 12	75 12
Superintendent's salary	......	....	842 74	842 74
Total	......	$254 00	$8,538 14	$8,792 14

L. T. RICHARDSON,
Superintendent.

SECTION 2, OSWEGO CANAL — A. SALLADIN, JR., *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of A. Salladin, Jr., Superintendent of Repairs, of twenty-three miles of the Oswego canal, extending from Oswego to Three River point, also the Oneida river improvement, twenty miles, during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structures.	Cost of repairs of old, etc.	Total new and old.
Locks	21	....	$157 17	$157 17
Lock tending (exclusive of oil)	......	....	4,794 00	4,794 00
Lock-gates	100	$649 40	943 79	1,593 19
Aqueducts	1	....	......	....
Waste-weirs	8	114 54	32 00	146 54
Culverts	4	....	....	....
Road bridges (wood)	6	....	283 05	283 05
Road bridges (iron)	5			
Tow-path bridges (wood)	5			
Tow-path bridges (iron)	1			
State scows	2	....	29 63	29 63
Small boats	2	....	....	....
Lock-houses	17	137 30	39 18	176 48
Workshops	1	....	52 90	52 90
Timber-sheds	1	....	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	....	954 01	954 01
Dams (3386 feet bracketing)	......	....	62 68	62 68
Vertical wall	......	....	143 62	143 62
Docking	......	....	56 07	56 07
Repairs of breaches	......	....	502 67	502 67
Watching canal	......	....	97 25	97 25
Tools, including shovels, picks, crowbars, axes, etc	......	....	13 50	13 50
Other miscellaneous expenditures	......	....	13 50	13 50
Other work of consequence which does not come under any of the above heads, viz.:				
Publishing abstract	......	....	33 75	33 75
Taking inventory,	......	....	4 00	4 00
Piling timber	......	....	25 55	25 55
Superintendent's salary	......	....	657 26	657 26
	......	....	....	$9,796 82

Locks and gates.

New gates have been framed and placed in the following locks: Two lower gates at guard-lock No. 3; two upper gates at lock No. 9; four at side-cut lock at Fulton, and one lower gate on hand for lock No. 9.

Sixteen balance-beams have been made, four on gates at side-cut lock, two each on gates at locks Nos. 9, 17 and Caughdenoy lock, and one each on locks Nos. 8, 11, 16, 18 and guard-locks Nos. 3 and 5.

Gates in locks Nos. 9, 10, 16, 18, Oak Orchard and guard-lock No. 1, have been raised and recleated.

Fender planks have been put on gates in locks Nos. 10, 16 and guard locks Nos. 4 and 5, and in Caughdenoy lock.

Locks Nos. 9 and 10 have been repointed, and the bottom of lock No. 9 repaired.

The bottom of lock No. 9 should be taken up this winter and concreted and replanked to stop leak around walls of lock.

New gates will be needed the coming year, as follows: Two gates at guard-lock No. 2; one lower gate at lock No. 9; two lower gates at guard-lock No. 3, and three gates at guard-lock No. 5.

New mitre-sills should be put in guard-lock No. 5 before the opening of navigation, next year.

Bridges.

Bridges Nos. 17, 20, 22, 30 and the bulkhead bridge at Oswego have been entirely replanked.

Two needle-beams have been placed in No. 20; four saddles and new floor joists in No. 19, and repairs made to others where necessary.

Tow-path bridge No. 18 should be rebuilt the coming winter.

Lock-houses.

Three new lock-houses have been built the past year for locks Nos. 9, 10 and guard-lock No. 5.

New houses should be built for lock No. 14 and guard-lock No. 1.

Tow-path.

About two miles of tow-path have been repaired, on levels Nos. 9, 10 and 18, with ashes.

Extensive repairs are being made on level No. 16, by grading, ditching and building stone sluices where necessary.

Two new sluices, one each on levels Nos. 7 and 18, of timber, have been put in.

The river side of tow-path, on level No. 10, has been repaired with spawls at weak points, and minor repairs have been made all along the section.

Docking.

Repairs to docking have been made on levels between locks 8 and 9, and between guard-lock 3 and lock 8, also at guard-lock No. 1 (level 5), and at foot of Caughdenoy lock.

Repairs to docking are necessary at many points, and the material therefor has been ordered.

Breaches.

During the early winter about eighty feet of berme bank between the canal and river, on level 6, gave way to the depth of seven feet, which was replaced with gravel and rip-rapped with stone, at a cost for labor of $345.55.

Several breaks have occurred on this level previous to this one, and I would recommend that a watchman be employed there during the winter months.

Dams.

Portions of the apron of the Oswego dam have been washed out. I would respectfully recommend that a new apron of the sloping style be built. The condition of the dam demands that the work should be done during the coming summer.

The bulkhead at each end of Battle island dam should be rebuilt.

Waste-weirs.

New waste-weirs have been constructed on levels 13 and 15.

The waste-weir on level No. 8 should be rebuilt.

Vertical walls.

The retaining wall between locks 17 and 18, at Oswego, has been temporarily repaired. An appropriation was made two years ago to rebuild this wall, which sum was expended, leaving a portion unfinished. An appropriation should be secured this winter to complete the work.

Navigation.

The required depth of water has been maintained during the season of navigation by bracketing the dams during low water.

A. SALLADIN, Jr.,
Superintendent.

CAYUGA AND SENECA CANAL — D. W. COLVIN, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of D. W. Colvin, Superintendent of Repairs of the whole twenty-three miles of the Cayuga and Seneca canal, extending from Montezuma to Geneva, with branch from Mud lock to Cayuga, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	11	$40 34	$40 34
Lock tending (exclusive of oil)	......	1,647 00	1,647 00
Oil for locks	......	56 34	56 34
Lock-gates	44	....	....
Waste-weirs	1	....	....
Culverts	9	....	....
Farm bridges (wood)	1	....	....
Road bridges (wood)	5	160 85	160 85
Road bridges (iron)	11	94 08	94 08
Tow-path bridges (wood)	26	44 34	44 34
State scows	2	50	50
Small boats	1	....	....
Lock-houses	8	....	....
Workshops	1	....	....
Watch-houses	8	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	256 44	256 44
Dams	5	59 53	59 53
Docking	......	59 08	59 08
Watching canal	......	200 50	200 50
Other work of consequence which does not come under any of the above heads, viz.:			
Picking up property and storing same	......	10 00	10 00
Publishing and filing abstracts	......	16 50	16 50
Superintendent's salary	......	674 19	674 19
Total	......	$3,319 69	$3,319 69

CAYUGA AND SENECA CANAL — JOHN McKEON, *Superintendent.*

YEARLY STATEMENT *showing the name and number of structures or works, the different heads of expenditure and the total cost of each, on the line of the canal under the charge of John McKeon, Superintendent of Repairs of twenty-two miles of the Cayuga and Seneca canal, extending from Montezuma to Geneva, with branch from Mud lock to Cayuga, from March* 24, 1890, *to October* 1, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of new structure.	Cost of repairs of old, etc.	Total new and old.
Locks	11		$1,719 42	$1,719 42
Lock tending (exclusive of oil)			2,040 00	2,040 00
Lock-gates	44	$29 50		29 50
Waste-weirs	1			
Culverts	9			
Farm bridges (wood)	1			
Road bridges (wood)	5		524 57	524 57
Road bridges (iron)	11			
Tow-path bridges (wood)	26			
State scows	1			
Small boats	1			
Lock-houses	8		16 50	16 50
Workshops	1		28 00	28 00
Watch-houses	8			
Raising and repairing tow-path and berme bank (not including repairs to slope walls)			1,105 80	1,105 80
Dams and waste-gates	5		437 65	437 65
Docking			176 65	176 65
Assisting boats			41 10	41 10
Watching canal			184 34	184 34
Other work of consequence which does not come under any of the above heads, viz.:				
Repairing feeder			16 00	16 00
Inventory of State property			4 00	4 00
Repairing State dredge			11 00	11 00
Superintendent's salary			525 81	525 81
Total				$6,860 34

The Cayuga and Seneca canal extends from the Erie canal at Montezuma, to Seneca lake at Geneva, with a branch from Mud lock to Cayuga.

The structures are eleven composite lift-locks, one side-lock at Seneca Falls, nine culverts, one pier at the foot of Cayuga lake, one pier at the foot of Seneca lake, eleven iron bridges, five wood bridges, twenty-six tow-path bridges, one farm bridge, and five dams.

The sum of expenditures upon the Cayuga and Seneca canal during my term of office, viz., from March 24, 1890 to October 1, 1890, was

$6,334.53. All the structures are in fairly good condition, with the exceptions of the change bridge at Rumsey's, which needs rebuilding at once, and the docking at Geneva, which is very much out of repair. It will require a large expenditure of money to put the latter in proper condition. There has been no delay or obstruction on this canal for the past year. The water in Seneca lake has been unusually high, and it has required unremitting attention to keep it within bounds.

JOHN McKEON,
Superintendent.

SENECA FALLS, N. Y., *October* 8, 1890.

WESTERN DIVISION.

Hon. Edward Hannan, *Superintendent of Public Works:*

Sir.— I respectfully present to you my report as assistant superintendent of public works for the western division of the Erie canal, for the fiscal year ending September 30, 1890, as follows:

The division consists of four repair sections of the Erie canal, Nos. 8 to 11, inclusive, divided as follows:

Number of section	Commences.	Ends.	Dist'nce in miles.
8..........	East line of Wayne county.....	East line of Monroe county...	35.924
9..........	East line of Monroe county....	End of construction section 284...	39.624
10...... ...	End of construction section 284.	Sulphur spring guard-lock........	46.560
11..........	Sulphur spring guard-lock....	Buffalo, includ'g Hamburgh canal	26.815
Total......			148.923
There are also five navigable slips in the city of Buffalo, aggregating in length,			1.600
And Genesee river feeder and terminal slip of Genesee Valley canal, Rochester,			2.500
In all......			153.023

The unnavigable feeders are:

	Miles.
Tonawanda and Oak Orchard creek......................	11.55
Genesee Valley canal, from Cuba reservoir to old lock No. 87,	7.65
Genesee Valley canal, from Scottsville to Rochester.........	11.20
Total..	30.40

The canal is fed as follows:

1. Lake Erie at Buffalo.
2. Tonawanda creek at Tonawanda.
3. Tonawanda and Oak Orchard creek at Medina.
4. Allen's creek, through the old Genesee Valley canal, at Rochester.
5. Genesee river feeder in the city of Rochester.

Lake Erie is, however, the main supply, the others being contributory in varying proportions.

Navigation.

The water supply on the division was, with slight exceptions, abundant throughout the year and there were but two short detentions. The first of these was caused by the boat "James Fisher" which, in a temporary stage of low water, struck rock bottom opposite the Buffalo State yard, October 30, 1889, and sunk, delaying navigation seven hours; the second detention was caused by freshets in the early part of June last which flooded the tow-path of Tonawanda creek for several miles and stopped navigation thirty-six hours.

Complaints were made by boatmen this season of a current formed at the head of Lockport locks by the draught of water from that point to the lower levels through the races and tunnels of the manufacturing companies. I investigated these complaints and found that, although nearly all of them were exaggerated and many of them urged by motives having little reference to canal navigation, nevertheless, the draught at the mouth of the Hydraulic company's tunnel on the tow-path side above the locks was a real hindrance to navigation and a real grievance to boatmen. A partial closing of this tunnel during the latter part of the season lessened this cause of complaint. But considering the matter, I would recommend that this mouth of the tunnel on the tow-path side be shut up and that the Hydraulic company's allowance of water be passed entirely through the opening to their tunnel on the berme side.

The tug and grass drag were engaged during the portion of the season proper to such work in tearing out eel grass and taking measures to prevent its growth on the various levels of the division liable to this annoyance.

Bottoming out.

By appropriation, chapter 568, Laws of 1889, $23,941.65, were expended bottoming out on the various sections of this division. On section No. 8, work was done at Lyons, Lock Berlin, Newark and Macedon. The portion of the seventeen-mile level between Macedon and Wayneport, was excavated below its original depth; as, for some peculiar reason, it used to be hardly possible to keep a navigable depth of water in that locality. This season boats have passed it without obstruction.

Bottoming-out was done on nearly all the levels of section No. 9 through Fairport, Brighton, Rochester, Spencerport and Brockport. On section No. 10 work was done at Holly, Albion, Medina, Eagle Harbor, Middleport, Lockport and thence toward the west end of the section. Bottoming out on section No. 11, charged to the appropriation, was done with tug and dredge during the season of navigation.

Bridges.

Section No. 8. New cables and lifting gear were put in Clyde lift-bridge and a small turbine wheel, operated by water from the canal, applied to working it. An iron bridge was set up in place of wooden bridge No. 3, which fell in April last.

Section No. 9. A new iron bridge was built by special appropriation, chapter 481, Laws of 1889, at Culver street, Rochester; bridge No. 56 was rebuilt; No. 97 was renewed with Whipple truss; No. 104 was replaced by an iron bridge removed from Smith street, Rochester, where a new lift-bridge was erected by the city. Western avenue bridge, Rochester, was strengthened by replacing single cables with double ones to sustain the counter weights; these weights which had worked in sections were connected together with plates and bolted so as to exert a uniform pressure; the top shafting was realigned and fitted with double-grooved pulleys, new valves were put in the water pipes, and other repairs, with a view to the safety and efficiency of the bridge, were made.

The mode of lifting Brockport bridge was also changed from hand to water power by means of a small turbine wheel set in the base of the bridge embankment.

Section No. 10. Cady street bridge, Lockport, was rebuilt.

Section No. 11. The northern abutment of Pendleton change bridge was rebuilt.

Bridges throughout the division were replanked and repaired where necessary, and, by a general order, all of them in a condition to require it were repainted.

Locks.

Section No. 8. A new tumble-gate and platform were placed in lock No. 60, and new upper tow-path gates in locks Nos. 58 and 59.

Section No. 9. A new tumble-gate and pier were put in lock No. 63 and a pair of new lower gates in lock No. 65.

Section No. 10. Two new gates were placed in lock No. 69 and two in lock No. 71.

Section No. 11. The old gates were replaced with new ones in the guard-lock.

Culverts, stop-gates and waste-weirs.

Culvert No. 1, section 8, which last year, on account of a leak, caused trouble and expense and a stoppage of navigation, was last spring permanently repaired.

The stop-gates on the various sections were overhauled and put in working order and waste-weirs were attended to where their condition required attention.

The spillway of Cuba reservoir was lowered five and a half feet in deference to the protestations of people in its vicinity, who considered their lives and properties threatened by the massing of the waters in the reservoir above them to the full height of the dam. The reduction of the spillway, therefore, removes the fear, as well as the possibility of a disaster to the Oil creek valley like the calamity at Johnstown.

Banks, walls and docking.

Unusually wet weather during the season softened the banks and caused an alarming number of leaks and slides on high embankments throughout the division, and destructive breaks at several points were prevented only by unusual care and promptness. Such dangerous leaks occurred at Clyde, Palmyra, Fairport, Bushnell's Basin, South Greece and Shelby Basin. At Bushnell's Basin, on section 9, a retaining wall thirty-six feet long, eight feet thick and eighteen feet high was built, and in all other places mentioned the banks were trenched, sheet-piled and loaded with gravel.

Usual and necessary repairs were made to keep walls and docking in good condition.

Western division shops.

I append a statement showing the nature and amount of work done in the western division shops for the year.

Special appropriations.

Besides bottoming out, heretofore described, expenditures (for which see financial statement) were made by me on the following works by special appropriations: Lengthening of locks Nos. 65 and 66, section 9, chapter 568, Laws 1889; building of Culver street bridge, Rochester, chapter 481, Laws of 1889; opening State ditch in the town of Murray, chapter 28, Laws of 1890; Fox creek improvement, chapter 352, Laws of 1889; ditching (work done at Macedon, Lyons and Clyde), chapter 240, Laws of 1889; protecting highway from Genesee river at rapids, Rochester, chapter 565, Laws of 1889; Adams' Basin waste-weir, chapter 228, Laws of 1889; improving and extending Bird island pier, Buffalo, chapter 295, Laws of 1890; retaining wall near Niagara street, Buffalo, chapter 351, Laws of 1889.

RECOMMENDATIONS.

I recommend that a spillway 200 feet long be built between Mill and Amherst streets, in the city of Buffalo, in view of the damage occurring year after year in that locality on account of high water.

Respectfully.

GEORGE CHAMBERS,
Assistant Superintendent.

EXPENDITURES *for ordinary repairs by* JAMES SHANAHAN, *Superintendent Public Works, for year ending September* 30, 1890.

	W. D. office.	W. D. expenses.	Section 8	Section 9.	Section 10.	Section 11.	Total.
Stationery	$6 50	$1 15	....	....	$4 00	....	$11 65
Telegraph and telephone	20 88	....	$12 16	....	45 13	$67 05	153 22
Expense	....	....	....	$15 20	9 20	....	24 40
Clerk's salary	300 00	106 00	....	....	....	....	406 00
Labor	....	1,387 45	75	497 58	....	....	1,885 78
Lumber	....	....	37 11	13 89	80 09	43 15	174 24
Ship chandlery	....	....	12 59	....	....	43 14	55 73
Paints and oils	....	32 16	....	54 19	164 66	70 60	321 61
Coal	....	....	29 52	23 68	2 00	723 06	778 26
Hardware	....	15 62	7 08	10 25	32 81	108 68	174 44
Blacksmithing, etc	....	....	34 52	4 21	207 22	138 76	384 71
Cement, stone and sand	....	....	27 07	2 00	14 88	10 80	54 75
Postage	5 50	....	....	....	....	....	5 50
Gas	....	....	....	....	66 20	....	66 20
Boat repairs	....	49 74	100 04	4 05	31 16	300 64	485 63
Freight and cartage	....	22 73	....	2 00	8 50	....	33 23
Castings	....	....	....	....	....	12 00	12 00
Towing	....	....	....	....	....	48 50	48 50
Diving	....	....	....	....	....	30 00	30 00
Totals	$340 88	$1,614 85	$260 84	$627 05	$665 85	$1,596 38	$5,105 85

EXPENDITURES *by* JAMES SHANAHAN, *Superintendent Public Works, from special appropriations, through* GEORGE CHAMBERS, *Assistant Superintendent, for the year ending September* 30, 1890.

	Buffalo retaining wall. Chapter 351, Laws 1889.	Fox creek improvement. Chapter 352, Laws 1889.	Ditching. Chapter 240, Laws 1889.	Highway protection, Rochester. Chapter 352, Laws 1889.	Total.
Labor	$297 50	$1,316 60	$1,392 78	....	$3,006 88
Hardware	....	10 80	....	....	10 80
Blacksmithing	201 00	....	....	....	201 00
Stone, cement, etc	....	....	85 41	....	85 41
Inspectors	....	....	....	$40 00	40 00
Totals	$498 50	$1,327 40	$1,478 19	$40 00	$3,344 09

EXPENDITURES *for ordinary repairs on Western Division, by* EDWARD HANNAN, *Superintendent of Public Works, for year ending September* 30, 1890.

	W. D. office.	W. D. expenses.	Section 8.	Section 9.	Section 10.	Section 11.	Total.
Stationery	$40 85	$3 85					$44 70
Telephone and telegraph	30 00	180 55	$41 74	$8 86	$56 68	$171 71	489 54
Expense	35 20	21 66	8 95	11 90	21 64	9 77	109 12
Clerk's salary	900 00	256 00					1,156 00
Labor		8,342 62	915 70	702 55	2,031 61	2,562 23	14,554 71
Lumber		61 56	1,503 35	4,506 75	4,683 68	11,573 19	22,328 53
Ship chandlery			201 59	444 56	57 96	356 57	1,060 68
Paints and oils		34 75	280 51	218 89	71 25	418 64	1,024 04
Coal		21 25	122 22	186 35	40 45	2,007 97	2,378 24
Hardware		1,445 77	526 51	322 02	1,056 63	980 18	4,331 11
Machinists' work and blacksmithing		101 57	451 04	1,357 01	1,650 57	1,058 00	4,618 19
Cement, stone and sand		62 85	573 88	392 40	182 33	40 50	1,251 96
Postage	30 00						30 00
Gas					327 84		327 84
Boat repairs			28 81		74 82	275 09	378 72
Freight and cartage			32 32	32 10	34 00	54 25	152 67
Castings		249 80	19 30	239 00	376 02	88 25	972 37
Dragging eel grass		780 00	290 00	200 00	78 75		1,348 75
Miscellaneous			64 43	9 25	3 25	14 67	91 60
Towing						28 50	28 50
New machinery		550 00				907 85	1,457 85
Use of machinery			260 51			2 00	262 51
Diving					95 00	50 00	145 00
Totals	$1,036 05	$12,112 23	$5,320 86	$8,631 64	$10,842 48	$20,599 37	$58,542 63

EXPENDITURES *by* EDWARD HANNAN, *Superintendent of Public Works on the western division of the Erie canal, from special appropriations, through* GEORGE CHAMBERS, *Assistant Superintendent.*

	Lengthening locks. Chapter 568, Laws 1889.	Bottoming out. Chapter 568, Laws 1889.	Bird island pier. Chapter 295, Laws 1890.	Adam's basin waste-weir. Chapter 228, Laws 1889.	Protecting highway, Chapter 565, Laws 1889.	Fox creek improvement. Chapter 352, Laws 1889.	Ditching. Chapter 240, Laws 1889.	Murray State ditch. Chapter 28, Laws 1890.	Culver st. bridge, Rochester. Chapter 481, Laws 1889.	Total.
Inspectors	$956 00	....	....	$220 50	$468 00	....	....	....	$420 00	$2,064 50
Labor	....	$23,610 28	$181 50	....	....	$1,985 60	$640 05	$216 75	....	26,634 18
Lumber	....	286 51	3 47	....	....	....	....	....	....	289 98
Expense	....	14 39	....	....	....	....	....	....	....	14 39
Blacksmithing	....	2 85	....	....	....	....	....	....	....	2 85
Hardware	....	27 62	86 64	....	....	7 65	....	....	....	121 91
Ship chandlery	....	....	139 50	....	....	....	....	....	....	139 50
Totals	$956 00	$23,941 65	$411 11	$220 50	$468 00	$1,993 25	$640 05	$216 75	$420 00	$29,267 31

SUMMARY *of expenditures on western division.*

By George Chambers, assistant superintendent:		
For ordinary repairs under James Shanahan, Superintendent of Public Works	$5,105 85	
For ordinary repairs under Edward Hannan, Superintendent of Public Works	58,542 63	
		$63,648 48
Special appropriations, James Shanahan, Superintendent of Public Works	$3,344 09	
Special appropriations, Edward Hannan, Superintendent of Public Works	29,267 31	
		32,611 40
Salary and expenses of George Chambers		3,546 27
Total		$99,806 15

By D. V. Teller, superintendent section 8	$32,230 05
By John S. Gunsaul, superintendent section 9	26,696 47
By H. H. Servoss, superintendent section 10	7,477 79
By F. C. Lillis, superintendent section 10	23,157 67
By Charles McDonough, superintendent section 11	53,070 99
	$142,632 97

ITEMIZED STATEMENT

Of earnings of western division shop during the fiscal year, exclusive of unfinished work.

	Stop-gates.	Water-weirs.	Lock-gates.	Paddles.	Locks.	Bridges.	Mitre-sills.	Labor.	Aqueduct.	Boats.	Feeder.	Total.
Cayuga and Seneca canal	....	....	$374 46	....	....	....	....	....	....	....	....	$374 46
Section No. 8, Erie canal	....	....	378 91	$80 00	$26 61	$298 23	....	$10 16	....	....	....	793 91
Section No. 9, Erie canal	....	$44 44	574 21	70 00	243 80	1,469 06	$34 32	....	$131 93	$144 52	$95 09	2,807 37
Section No. 10, Erie canal	$250 25	....	644 11	....	....	74 39	....	....	....	....	....	968 75
Western division repair shop, tools, machinery, etc	....	....	....	....	....	....	....	431 78	....	....	....	431 78
Western div'n, engineer's dep't	....	....	....	....	....	....	....	20 00	....	....	....	20 00
Cuba reservoir	....	....	....	....	....	....	....	17 42	....	....	....	17 42
Middle division, section No. 5	....	....	205 09	40 00	....	....	....	....	....	....	....	245 09
Contractor Patrick	....	....	610 44	80 00	....	....	....	....	....	....	....	690 44
Contractor Robinson	....	72 17	....	....	....	....	....	....	....	....	....	72 17
Totals	$250 25	$116 61	$2,787 22	$270 00	$270 41	$1,841 68	$34 32	$479 36	$131 93	$144 52	$95 09	$6,421 39

SECTION No. 8, ERIE CANAL — D. V. TELLER, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditures, and the total cost of each, on the line of the canal under the charge of D. V. Teller, Superintendent of Repairs, including thirty-six and twenty-seven-hundredths miles of the Erie canal, extending from the eastern to the western line of Wayne county, during the fiscal year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Total cost new and old.
Locks	9	$1,430 00
Lock tending (exclusive of oil)	......	14,785 00
Lock-gates	78	....
Aqueducts	2	....
Waste-weirs	4	....
Culverts	25	....
Lift-bridge (iron), road, Clyde	1	841 25
Farm bridges (wood)	7	
Road bridges (wood)	10	
Road bridges (iron)	22	
Tow-path bridges (iron)	2	
State scows	2	....
Small boat	1	....
Lock-houses	8	....
Workshop	1	....
Watch-houses	9	....
Timber-shed	1	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	......	6,903 21
Docking	......	211 55
Watching canal	......	1,888 00
Slope wall and culvert repairs	......	1,569 75
Other miscellaneous expenditures	......	2,656 61
Publishing abstracts	......	43 56
Filing abstracts	......	1 55
Painting	......	399 62
Superintendent's salary	......	1,500 00
Total	......	$32,230 05

Locks.

The following shows the new works and repairs done on each of the locks on section: Repair step irons, new run plank tow-path gates lock No. 54. Replace and wedge fall stone at head of double lock No. 60. New bolts and paddle connections under water, locks Nos. 55, 56, 61. Remove old tumble-gate and tumble-gate platform, insert new tumble-gate and platform lock No. 60. New wedges and wedge caps, cleating paddles to locks Nos. 55 and 56. General repairs to lock No. 54. Completing extraordinary repairs to lock No. 60. Insert new upper tow-path gates locks Nos. 58 and 59. New floors to tumble-gate platform locks Nos. 54 and 56. Insert six new paddles lock No. 56. Two new paddles lock No. 55 and usual repairs to iron works. Repair tow-post cut chain lock No. 55. Put in dam and repair jacks, new yoke on tumble-gate lock No. 56. Put in dam, repair tumble-gate platform and new bucking plank lock No. 59. Repair jacks and levers to lock No. 58, new bucking plank and run plank upper gates lock No. 61. Remove balance-beams from center gates heel-path lock No. 60. New lines on water power, locks Nos. 60 and 61. New bucking-beam upper tow-path gates, lock No. 56, and miscellaneous repairs to locks on section.

Bridges.

Repair floors to bridges Nos. 6, 8, 9, 10, 13, 14, 24, 26, 33, 35, 40 and 43. Prepare material for and place new coping and facing with outside joists on bridges Nos. 23 and 24. Thoroughly overhaul all bearings on gearing and level line shaft with new wire cables on drop guards to lift-bridge No. 4.

Floors have been repaired on bridges Nos. 4, 15, 17 and 18. Set up and placed on abutments iron bridge No. 3, in place of one which fell April last, with necessary approaches to floors, etc. Thoroughly repaired floor to bridges Nos. 4, 6, 15, 18, 24, 26, 30, 35, 39 and 40. Lift-bridge No. 4 thoroughly overhauled. Two new pulley-beams, plates on troughs, drilling, riveting, new set screws and line shaft and general repairs to gearing and shafting with trap to receive water from wheel and incidental changes necessary for successful operation of bridge; it was also replanked again this season. Bridge No. 5 thoroughly overhauled and replanked.

Dressing and preparing coping for bridges Nos. 15, 18 and 40. Coping bridge No. 15. New coping to bridge No. 40. Repair floors to bridges Nos. 14, 15, 18, 25, 39 and 40.

Docking.

Removed old wooden docking on berme side of canal east of Bartle & Eams' planing-mill, Newark, and putting in new 150 lineal feet.

Tow-path and berme banks repairs.

Drained, graded and graveled very heavy, tow-path from lock 56 to bridge No. 21, a distance of one mile. Graveled tow-path west of lock 60, on twelve-mile level west of and through parts of Palmyra. Graded and graveled centre ground, on locks 60 and 61, and approaches to bridges. Cut ditches to drain tow-path, and thoroughly cut noxious weeds the entire length of section on both sides of canal. Stopped leak on berme side, and weighted with gravel on Clyde level at culvert No. 5. Stopped leaks in berme bank west of Clyde glass factory.

Berme bank on Lock Berlin level east of bridge No. 9.

Repaired berme bank on Lockville level, both banks. Sheet-piled, graveled and very heavily loaded with stone for a long distance where the banks are very high and dangerous.

Bottoming Out.

There were $7,500 expended in bottoming out, under the special act of the Legislature for bottoming out, on the following levels on the section, at east end of seventeen-mile level, and west of lock 61: Very thorough bottoming-out was done the entire width of the canal and a little below bottom, and there were expended $4,965.32. On the level east of lock 57, beginning where we left off the year before, and taking both sides of the canal to change bridge, there was expended the sum of $789; above and below lock 55, Lyons, $545.03; on Lock Berlin level $1,200.65.

Painting.

All the bridges on the section have been painted except Nos. 1, 2, 9, 41 and 42 and a few other structures. State scow "Tonawanda Chief" was repainted this spring.

Culverts.

Culvert No. 1, where leaks occurred several times last season, was thoroughly repaired this spring and it is now secure.

Miscellaneous work completed.

State boat "Palmyra" thoroughly repaired; coping to bridges Nos. 17, 23 and 24 repainted; making new boom derrick; framing mitre-sills; removing stone lock walls and replacing the same; pointing lock walls lock No. 60; filling centre ground of lock 60 and removing debris about the lock; repairing slope wall and berme bank from bridge 31 to lock 61; carpenter work in repairing culvert No. 1 and repairs to culverts 2 and 3; pointing portions of lock walls of locks 57, 58, 59; cleaning bottom of lock 53; making new gates to sluice on seventeen-mile level; removing old bridge No. 3 from canal; hauling lock-gates and lumber from railroad to State yard and to different points on section where needed; making seventy snubbing-posts; repairing floors to State boats; framing and laying 150 lineal feet docking on berme bank side above bridge 39, ninety feet on berme bank side Palmyra, 100 feet at aqueduct and under change bridge at Palmyra, 100 lineal feet sidewalk approach to bridge 15, seventy lineal feet bridge 16; extra labor tending lift-bridge No. 4, Clyde; framing and laying 100 lineal feet docking between locks 58 and 59; repaired docking in various places on section; assisting in preventing breaks in high banks east of Palmyra by driving sheet piling and by placing heavy stones in rip-rap wall, and receiving, measuring, assorting and piling lumber, etc.

RECOMMENDATIONS.

Locks.

Lock No. 53. New lining to bottom of tow-path lock. New mitre-sill at head of lock. New wedges and cap on middle ground side at head of heel-path lock and replace stone in lock wall loosened, and repair walls in both the heel-path and the tow-path lock.

Lock No. 54. New tumble-gate platform at head of heel-path lock and new wedge cap and four new paddles in swing-gates with necessary iron work.

Lock No. 55. New lower gates in tow-path lock with new mitre-sill.

Lock No. 56. New tumble-gate platform at head heel-path lock, new paddles and repair tumble-gate. New wedge caps on locks Nos. 57 and 58. New mitre-sill lower tow-path gates lock No. 58. New middle gates in double lock, with new mitre-sill, new crib at head of lock No. 61.

Aqueducts.

I recommend one span of the Palmyra aqueduct to have new joists and floor, and also repairs to the sides, if not new. The material is on hand for the joists and floor.

Waste-weirs.

The wing walls of the waste-weir on Lyon's level should be taken down and relaid next spring.

Lock walls.

All the old locks should be pointed more or less.

Bridges.

New coping on floors of bridges Nos. 15, 18, 40; repairs to floors of bridges Nos. 14, 15, 18, 25, 39 and 40. A new bridge for No. 6, now taken down; the material is on hand for a new wooden bridge. And also a new bridge should be erected in place of bridge No. 41, condemned. The wooden trunks through the banks of the canal on the Clyde and seventeen-mile levels are defective and should be taken out and iron pipes put in, for they are needed to drain these levels low enough to bottom out.

Docking.

At Palmyra, Newark and Lyons, an aggregate of 2,000 lineal feet of docking should be laid on the vertical wall.

Bridge abutments.

The abutments of bridges 39 and 42 on the north side of the canal should be taken down and relaid.

Bottoming out.

Fifteen thousand dollars should be expended in bottoming out on the following levels on section: Clyde, Lyons, Newark, and twelve and seventeen-mile levels.

The fiscal year just passed has been marked by successful navigation over section. Not a sunken boat or a moment's delay from any cause has hindered boatman in transit.

The standard depth of water has been maintained over all mitre-sills. Excessive rains in May and September caused softening of banks in various places, producing leaks which by the vigorous and timely labor of permanent employés prevented threatened breaks.

D. T. TELLER,
Superintendent of Repairs.

ERIE CANAL, SECTION No. 9 — JOHN S. GUNSAUL, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditure and the total cost of each, on the line of the canal under the charge of John S. Gunsaul, Superintendent of Repairs of forty miles of the Erie canal, extending from east line Monroe county to west end construction section No.* 284, *during the fiscal year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	5	$1,404 92	$1,404 92
Lock tending (exclusive of oil)		8,192 50	8,192 50
Stop-gates	3		
Aqueducts	1	8 00	8 00
Waste-weirs and stop-gate repairs	7	245 85	245 85
Culverts	32	66 12	66 12
Weigh-locks	1	4 75	4 75
Farm bridges (wood)	76	2,630 10	2,630 10
Farm bridges (iron)			
Road bridges (wood)			
Road bridges (iron)			
Tow-path bridges (wood)			
Tow-path bridges (iron)			
State scows	2	61 30	61 30
Picking stone		75 00	75 00
Ice-breakers	2	10 00	10 00
Sheet piling		800 00	800 00
Lock-houses for tending bridges	7	1,702 34	1,702 34
For publishing and filing abstracts		44 94	44 94
Watch-houses for regulating water at weigh-lock	6	274 95	274 95
For moving material		806 18	806 18
For searching and filling rat holes		92 80	92 80
Piling machines for assisting boats	1	20 34	20 34
Raising and repairing tow-path and berme bank (not including repairs to slope walls)		1,864 21	1,864 21
For setting snubbing-posts		38 34	38 34
For repairs and new bulkhead in feeder	1	195 48	195 48
For slope and vertical walls repairs		358 84	358 84
Docking		106 69	106 69
Repairs of breaches		2,765 68	2,765 68
Watching canal		2,951 22	2,951 22
Wheelbarrows, sorting and piling lumber		16 25	16 25
Other work of consequence which does not come under any of the above heads:			
For building and repairing piers		125 00	125 00
For cutting weeds on banks of canal		286 84	286 84
For cutting eel grass in feeder		47 83	47 83
For superintendent's salary		1,500 00	1,500 00
Grand total			$26,696 47

Bridges.

No. 54, replanked; No. 56, rebuilt with Whipple truss; No. 59, two new needle-beams; No. 67½, replanked; No. 71, replanked; No. 77, double roadway, one side replanked; No. 88, one new needle-beam; No. 94, one new needle-beam; No. 97 has been replaced by a new Whipple truss; No. 104, replaced by a Whipple arch formerly doing service at Smith street, Rochester; No. 109, Whipple arch, replanked, also new joists. I would say in connection with bridge repairs that West avenue lift-bridge in Rochester has been thoroughly overhauled and put in good working condition; the single grooved wheels were removed on top of shafting and replaced by thirty-six double-grooved wheels. Seventy-two new cables one inch in diameter and twenty-two feet in length were used to connect counter-weights with floor of bridge 72; new bails or hangers were made of wrought-iron one and a half inches in diameter to take the place of old ones one and a quarter inches; thirty-six new clevises were made from two-inch round iron, with two-inch pins, to take the place of clevises that were one and a half inches in diameter; thirty-six large double and eight single wrought-iron sockets were made to connect cables with floor of bridge; counter-weights were connected together at panel points by heavy one-half-inch plates, with twelve bolts one-inch in diameter at each connection; two new valves were put in water pipes, one for filling and one for emptying motors, to take the place of ones that were leaking badly; the four lines of shafting on top of bridge were lined and leveled up, each line of shafting having settled in the center from three-eighths to seven-eighths inches. Brockport lift-bridge has been changed from its former mode of hoisting with cranks by hand to water power, with turbine wheel, a much needed improvement.

Locks.

No. 62, platform repaired and upper gates replanked, also new tumble-gate and new pier at head of lock; No. 63, new bulkhead, platform repaired and gates partly replanked; No. 64, bottom partly replanked and grouted and four new paddles, gates partly replanked, platform to tumble-gate repaired; No. 65, pair of new lower gates complete and four new paddles and new cap over recess, new bottom put in tow-path lock, upper gates partly replanked, mitre-sills repaired and masonry repointed.

Docking.

There have been 500 lineal feet of oak docking relaid in the city of Rochester; also repairs made wherever necessary on the section.

Tow-path and berme bank.

The tow-path and the berme bank were carefully looked after; the former graveled and the latter strengthened to improve their condition.

Stop-gates.

The stop-gates at Bushnell's basin and Cartersville bulkheads were rebuilt; also a new pier was built at west side of stop-gate at Adams' basin.

Dams.

The dam across the Genesee river at the head of feeder has been replanked from the sluiceways to the east end and partly retimbered; also new double bulkhead was built at the head of feeder and the bottom at that point well secured with grouting.

Excavations.

In the way of bottoming out, would say that wherever men could be obtained they were set at work bottoming out to the original bottom at points where most needed on section, viz.: on Perrinton straights, on three-mile level, in Rochester, Spencerport, Adams' basin and Brockport.

Breaches.

There has been a large amount of work done upon breaches this season, especially at Bushnell's basin. The bank at this point is about forty feet high and is composed of sand. There was a bad leak at that point last season and the bank was trenched and sheet piled, partially stopping leak, but it was still in a dangerous condition. There has been a wall thirty-six feet in length, eight feet in width and eighteen feet in height built at foot of bank and loaded with gravel, making it safe. A slide, 150 feet long, occurred on the tow-path bank one mile west of South Greece. It was repaired by sheet piling, loaded with stone and gravel. Two slight breaches occurred a short distance below Dive culvert, east of Fairport. They were repaired with sheet piling.

Sunken boats.

The boat James Storer, laden with jute butts, sank at Pittsford on May sixth, caused by stemming the pier of Cartersville stop-gate, and was assisted by State scow crew and State pump from Pittsford to dry dock in Rochester, with no hindrance to navigation.

Water.

The water during the present year has been exceptionally good. The supply was plentiful, the eel grass, the chief obstruction to its flow, having been kept well down by dragging on the sixty and seventeen-mile levels.

Walls.

The slope and vertical walls were repaired and stone-picked during spring repairs wherever necessary on the section.

Bridge painting.

There have been twenty bridges painted on this section this season.

RECOMMENDATIONS.

Locks.

There is needed at lock No. 64 one pair of new middle gates, and at No. 66, a new tumble-gate. There should be new mitre-sills in all the old locks; also platforms for all the tumble-gates, for which there is timber and lumber now in yard.

Bridges.

No. 59, No. 92 and No. 94 need to be rebuilt.

Aqueduct.

The railing and tow-path are in very bad condition, for both of which timber and plank is being furnished that will be put in place the coming winter; also, the masonry needs repointing.

Excavations.

I would recommend that excavations be made as follows: On Perrington straights, tow-path side, from Knapp's bridge to the county line; the berme side, between Dive culvert and Baker's bridge, east of Fairport; from the bridge at Bushnell's basin, to Cartersville, on berme side; from Weed's bridge, three-mile level, to Donnelly's bridge, on berme side; in the city of Rochester, from Alexander street bridge to Goodman street bridge, on berme side; and also from four-mile bridge, west of Rochester, to Brockport, except where excavations have been made during the past two seasons.

Culverts.

The double arch culvert at Adams' basin should be taken up for about forty feet on the berme side and a foundation of piles driven to the rock, as it has settled until it is in dangerous condition, and the crib that was placed at that point, after the break, should be replaced by a retaining wall; also, the wing and breast walls of nearly all the culverts on the section need to be taken down and relaid.

Walls.

There should be about 800 lineal feet of wall in Rochester taken down and rebuilt; also, at least 500 yards of wall stone should be used in rebuilding. The walls were not of sufficient thickness when originally built.

New York Central Railroad.

The abutment of the New York Central Railroad bridge, on tow-path side, at Cartersville, is in a dangerous condition and should be rebuilt before the opening of navigation next spring.

JOHN S. GUNSAUL,
Superintendent Canal Repairs.

SECTION No. 10, ERIE CANAL — HORACE H. SERVOSS, *Superintendent.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditures, and the cost of each, on the line of the canal under the charge of Horace H. Servoss, Superintendent of Repairs of forty-eight miles of the Erie canal, extending from west end of construction section No.* 284 *to and including guard-lock west of Lockport, during the* 174 *days ending March* 23, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost of repairs of old, etc.	Total new and old.
Locks	6	$123 90	$123 90
Lock tending (exclusive of oil)	....	3,403 50	3,403 50
Lock-gates	36	....	....
Aqueducts	1	....	....
Waste-weirs	10	....	....
Culverts	66	94 70	94 70
Farm bridges (iron)	1	7 80	7 80
Road bridges (wood)	22	69 95	69 95
Road bridges (iron)	47		
Tow-path bridges (wood)	....	1,163 06	1,163 06
Tow-path bridges (iron)			
State scows	2	....	....
Small boats	1	....	....
Ice-breakers	1	....	....
Lock-houses	1	....	....
Workshops	3	....	....
Watch-houses	5	....	....
Storehouses	1	....	....
Timber-sheds	2	....	....
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	672 45	672 45
Docking	....	324 34	324 34
Watching canal	....	1,170 00	1,170 00
Other miscellaneous expenditures	....	367 17	367 17
Other work of consequence which does not come under any of the above heads, viz.:			
Stop-gates and waste-weir	....	325 63	325 63
Tending Albion swing-bridge	....	366 00	366 00
Publishing abstracts	....	19 00	19 00
Gauging and regulating water at Lockport	....	152 50	152 50
Superintendent's salary	....	842 74	842 74
Total	....	$9,102 74	$9,102 74

SECTION No. 10, ERIE CANAL — FRANK C. LILLIS, *Superintendent.*

ANNUAL REPORT, *showing the name and number of structures or works, the different heads of expenditure, and the total cost of each, on the line of the canal under the charge of Frank C. Lillis, Superintendent of Repairs of forty-eight miles of the Erie canal, extending from west end of construction section No.* 284, *to and including Sulphur Springs guard-lock, during the* 191 *days ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Cost, new and old.
Locks (combined), 5; guard-lock, 1	6	$2,580 00
Lock tending (exclusive of oil)	....	5,185 00
Lock-gates	36	....
Aqueducts	1	....
Waste-weirs	10	315 00
Culverts	66	632 68
Extension of pier at Lockport	....	924 02
Tending Albion swing-bridge	....	618 00
Swing-bridges	1	1,225 25
Road bridges (wood)	22	
Road bridges (iron)	47	
East Holley stop-gate	....	713 30
West Holley stop-gate	....	316 15
State scows	2	269 60
Small boats	1	....
Ice-breakers	1	....
Lock-houses and office	1	....
Workshops	3	....
Watch-houses	5	....
Storehouses	1	....
Timber-sheds	2	....
Teaming and piling lumber	....	430 00
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	3,920 86
Cleaning out bottom of canal during spring repairs	....	2,000 35
Publishing abstracts	....	78 60
Slope wall	....	377 00
Docking	....	300 00
Watching canal (O. O. C. feeder and guard-lock)	....	1,795 50
Gauging water	....	250 00
Other miscellaneous expenditures	....	445 15
Other work of consequence which does not come under any of the above heads, viz:		
Superintendent's salary	....	657 26
Total	....	$23,032 72

Locks.

The combined locks were all repaired and four new gates put in, two in lock No. 69 and two in lock No. 71, the bottoms were replanked where found necessary; two new culverts and three new slides were put in, and all other work was thoroughly overhauled and put in good repair. The masonry was repointed, and some poor stone taken out and good stone put in its place. Since the opening of navigation one slide and three culverts have been renewed.

Bottoms and walls.

The bars and slides were removed from the bottom of the canal, also all loose stone, the walls were rebuilt where they had caved in along the section, the State race was also cleaned out.

Pier at head of locks.

The pier at the head of the combined locks was repaired and extended seventy-five feet, which makes a much needed improvement that boatmen appreciate. I would recommend that a skeleton pier be constructed from the head of the pier to Cottage street bridge, No. 162; this can be done for a small sum next spring, and it will prevent boats from being held at the State race by the suction which exists there.

Banks.

The tow-path and berme bank have been raised and strengthened by sheet piling, puddling and gravel. During the freshet which occurred June fifth, the water rose above the tow-path from Heacock's bridge, No. 166, to the guard-lock, doing considerable damage which was repaired as soon as possible. The tow-path and banks are now in good condition.

Aqueduct.

The aqueduct in Medina badly needs repairing, the earth should be taken out from the breastwork wall on the north side and masonry grouted up and well puddled outside the grout, and the earth replaced, the remaining masonry should be repointed. The bridge over the aqueduct is worn out and should be renewed.

Waste-weirs.

The waste-weirs at Middleport and Albion were rebuilt; those at Mabees and Holley repaired. The waste-weirs at Lockport, Medina and Brockville are in a very bad condition and should be rebuilt next spring. The bulkhead at the locks is worn out and needs rebuilding.

Walls.

The south wall of lock No. 71, the upper lock at Lockport, has been pressed forward by the action of the frost and by the ice in the State race south of it to such an extent that the face of the lock-gates has to be dressed off three inches to allow boats to go through the lock. The wall should be dressed off and the hollow quoins dressed out so that the gates can be put in full size. The division wall, between lock No. 70 and the State race, has been pressed out by the action of the frost and the water so that it leaks very badly. I would recommend that it be taken down next spring and relaid.

Culverts.

The arch stones in some of the culverts have become loosened. They should be replaced and the culverts pointed with cement.

Guard-lock.

During the month of July the old gates were taken out of the guard-lock and replaced with new ones; the guard-lock is now in good condition.

Stop-gates.

The stop-gates at the road culvert east of Medina were repaired. The stop-gates at East Holley were rebuilt. The West Holley stop-gates are in bad condition and should be rebuilt, and the piers and masonry renewed; the bulkhead at the road culvert stop-gates should also be renewed.

Grass-drag.

Sections 8, 9 and 10 were dragged during the months of June and July. The old drag is worn out and will not stand another season; a new one has been built.

State boats.

The repair boats Medina and Albion were repaired in the spring, and have been constantly employed during the season repairing the banks. The Albion will require considerable repairing during the winter.

Bridges.

The bridges on this section, with few exceptions, need new floors; all the planking on the section available has been used in renewing floors. The lumber has been ordered for all the bridges, and they will be put in good condition as fast as the lumber arrives. Jaqueth's bridge, No. 123, highway Whipple truss, should be rebuilt, as it is in very bad condition. Two State ditch bridges, one at Hodginsville and one at Buttermilk lane, have been rebuilt. The Cady bridge No. 160, which was destroyed last winter, has been rebuilt; the approaches to bridges Nos. 156, 164½, 160, 161 and 164 have been repaired with broken stone and gravel. Bridge No. 167 needs new bench trusses on both sides. All the bridges from bridge No. 168, at guard-lock, to and including bridge No. 145, at Middleport, have been repainted; the remaining bridges are badly in need of paint.

Docking.

About 2,250 lineal feet of ten by twelve oak docking has been renewed.

Miscellaneous.

During the summer several small leaks were discovered and reported by the bank watchmen, which were readily stopped by the men on the repair boats. A leak which occurred at Shelby basin between the culvert and the break of a year ago presented a dangerous appearance. The two repair boats, assisted by the division boat, were engaged for two days, under the supervision of Division Superintendent Chambers, in repairing. Had a break occurred here navigation would have been greatly delayed. The lock-house and office on the combined locks and the storehouse and workshops at Lockport have been repaired, but further repairs are necessary. I would recommend that the canal be deepened under the Transit street bridge, No. 164, also that 3,000 feet of boom logs be placed in the cut above Lockport, as there are a great many sharp projections on the face of the rocks, which are dangerous to boats.

There has been no delay in navigation except for two days in June during the high water. The water has been well kept up on the levels during the season.

FRANK C. LILLIS,
Superintendent.

SECTION No. 11, ERIE CANAL — CHARLES McDONOUGH, *Supt.*

ANNUAL REPORT *showing the name and number of structures or works, the different heads of expenditure and the total cost of each, on the line of the canal under the charge of Charles McDonough, Superintendent of Repairs of twenty-eight miles of the Erie canal, extending from Sulphur springs guard-lock to Buffalo, during the fiscal year ending September* 30, 1890.

STRUCTURES OR WORKS, ETC.	Whole number on section.	Total cost new and old.
Locks	3	....
Lock tending (exclusive of oil)	....	$4,265 81
Farm bridges (wood)	52	14,166 51
Farm bridges (iron)	3	
Road bridges (wood)	2	
Road bridges (iron)	29	
Tow-path bridges (wood)	2	
Tow-path bridges (iron)	5	
Harbor master	....	637 50
Assistant harbor master	....	120 00
Harbor scavenger	....	256 00
Transporting material	....	2,355 75
Rebuilding State dredge	....	990 12
Pile driving	....	3,060 50
Raising and repairing tow-path and berme bank (not including repairs to slope walls)	....	20,362 55
Cleaning out bottom of canal	....	1,607 50
Tending flood-gates	....	415 00
Receiving and storing timber	....	647 00
Watching canal (days) and State yard (nights)	....	2,283 50
Printing abstracts	....	53 25
Painting bridges	....	50 00
Superintendent's salary	....	1,800 00
Total	....	$53,070 99

Water.

The depth of water on this section during the past season has been very good. We have had low water but once this year and that was only for a few days.

Navigation.

On two occasions only was navigation interrupted during the past season. The first was caused by canal boat Jacob Fisher, Jr., which sunk Sunday, October 13, 1889, opposite State yard, by striking the solid rock bottom at this point, the water being extremely low; she sunk crosswise in the canal and delayed navigation about seven hours. The second interruption occurred in Tonawanda creek, June 5, 6, 7 and 8, 1890, the water on the creek being so high that the tow-path was covered with from one foot to three feet of water for miles; the rise in the water was owing to an unusual heavy rainfall over the vast territory which is drained by Tonawanda creek. Every possible effort was made to lower the water, and finally, after sixty-six hours delay, navigation was resumed.

Tow-path.

The tow-path is in fair condition almost its entire length. We have cindered a considerable portion during the past season, and we have also boated from Buffalo a large quantity of stone and placed same in rip-rap on the slope wall on Tonawanda creek. Some portions of the tow-path between Pickard's bridge and Pendleton are low and should be raised. The tow-path between Pendleton and the Sulphur springs guard-lock should also be raised and repaired. This portion of the bank is vertical and will need new piling, cap timber and sheet piling for a considerable distance.

Locks.

The ship-lock and guard-lock at Black Rock and the river-lock at Tonawanda have been in good working order almost the entire season. The only thing outside of ordinary repairs found necessary to be done was to lift two gates out at Tonawanda and one at Black Rock, for the purpose of putting in new paddles which had become broken.

Flood-gates.

The framework to the flood-gates at the dam in Tonawanda are in bad shape, owing to the decayed condition of the timber forming the structure. This framework should be thoroughly reconstructed the coming winter when the water in Tonawanda creek can be drawn down to river level. We have now the timber at the State yard necessary for this work.

Pile-driving.

During the season we have found it necessary to drive piles in the Ohio basin, Ohio basin slip, Bush's bridge and the ship-lock at Black Rock. We have surrounded the entire ship-lock with a wall of piles as a protection against the high water which at times rolls clear over the walls of the lock, and which has during the last two years washed a great portion of the banks into the river. The water may now roll over, but the banks, I think, will remain intact.

Bridges.

The large number of bridges on this section, with the exception of a few, are in good condition at the present time, but it has required a great deal of material and labor to keep them safe and in good order.

No new bridges have been built on the section during the past season.

According to recommendations made by me in my last report, I have caused the northerly abutment to the change bridge at Pendleton to be taken down and rebuilt. It is now in good and safe condition.

It is my intention to rebuild the tow-path bridge over the old canal at Pendleton before navigation opens for next season, as per recommendation made in my last report. The present bridge is old and dilapidated, and it is also too narrow for three-horse teams. The necessary timber is now at the State yard for this bridge. We have about completed the painting of all the bridges on the section, and there is a marked improvement in their appearance.

Docking.

Only ordinary repairs have been made to the docking timber this season, but it is in fair condition over the entire length of section.

Boats.

The State dredge has been engaged during the entire season bottoming out the canal between Buffalo and Black Rock, Commercial slip, Ohio basin slip and the Hamburgh canal. The dredge is now in first-class condition, having been entirely rebuilt last winter and her machinery thoroughly repaired and reset according to recommendation made in my last annual report.

The tug "Queen City" has been employed in towing mud scows and doing other necessary towing on section, also being required to do considerable towing for Bird island pier work, all of which have kept her continuously at work.

The steamer "Buffalo" is continually at work, being engaged boating lumber for section work and boating stone and cinders to Tonawanda creek. Its hull is becoming quite soft and will require considerable repairing this winter to make the steamer last another season. Our other boats, with the exception of the mud scows, are in fair condition. The mud scows will need considerable repairs before next season. I would request that we be allowed to build two new mud scows this coming winter for the reason that by having six scows instead of four it would give us a chance to use the tug in case of necessity for other work at times without having to pay extra tow bills.

Vertical wall.

About 120 feet of the vertical wall at the head of the single lock at Black Rock should be dredged out, and a new pile foundation put in on which should be built a substantial stone wall. It is now in very bad condition, and complaints are numerous among boatmen in regard to the poor entrance to this lock owing to the defective wall. I would recommend that it be remedied immediately after the close of navigation.

Recommendations.

I respectfully renew my recommendations of last year in regard to replacing the cast-iron bridges crossing Main, Chicago and Erie streets, in Buffalo, with new wrought-iron structures of modern design and extra carrying capacity, as the teaming over these bridges is becoming heavier every year, and these bridges were never intended to bear the loads which now go over them.

Respectfully submitted.

CHAS. McDONOUGH,
Superintendent.

TABLES

ACCOMPANYING THE

ANNUAL REPORT OF THE SUPERINTENDENT OF PUBLIC WORKS.

TABLE

Exhibiting the date of the opening and closing of the Hudson river, and the number of days open; also, the time of commencement and close of each navigable season of canals, and the number of days of navigation since 1824; *also the date of the opening of Lake Erie since* 1827.

OPENING AND CLOSING OF THE HUDSON RIVER.			COMMENCEMENT AND CLOSE OF NAVIGATION OF ERIE CANAL.			Opening of the lake.
River open.	River closed.	Days open.	Canal open.	Canal closed.	Navigable days.	
March 3, 1824	January 5, 1824	309	April 30, 1824	December 4	219	....
March 6, 1825	December 13, 1825	283	April 12, 1825	December 5	238	....
February 25, 1826	December 13, 1826	302	April 25, 1826	December 18	243	....
March 20, 1827	November 25, 1827	251	April 22, 1827	December 18	241	April 21, 1827
February 8, 1828	December 23, 1828	220	March 27, 1828	December 20	269	April 1, 1828
April 1, 1829	January 14, 1829	286	May 2, 1829	December 17	230	May 10, 1829
March 15, 1830	December 25, 1830	283	April 20, 1830	December 17	242	May 5, 1830
March 15, 1831	December 6, 1831	262	April 16, 1831	December 1	230	May 8, 1831
March 25, 1832	December 21, 1832	289	April 25, 1832	December 21	241	April 27, 1832
March 21, 1833	December 13, 1833	277	April 19, 1833	December 12	238	April 23, 1833
February 29, 1834	December 15, 1834	291	April 17, 1834	December 12	240	April 6, 1834
March 25, 1835	November 30, 1835	268	April 15, 1835	November 30	230	May 8, 1835
April 4, 1836	December 7, 1836	244	April 25, 1836	November 26	216	April 27, 1836
March 27, 1837	December 14, 1837	261	April 20, 1837	December 9	234	May 16, 1827
March 19, 1838	November 25, 1838	257	April 11, 1838	November 25	228	March 31, 1838
March 25, 1839	November 18, 1839	286	April 20, 1839	December 16	241	April 11, 1839
February 25, 1840	November 5, 1840	285	April 20, 1840	December 9	228	April 27, 1840
March 24, 1841	November 19, 1841	286	April 24, 1841	November 30	221	April 14, 1841
February 4, 1842	November 28, 1842	308	April 20, 1842	November 28	222	March 7, 1842
April 13, 1843	December 10, 1843	242	May 1, 1843	November 30	214	May 6, 1843
March 18, 1844	December 17, 1844	278	April 18, 1844	November 26	222	March 14, 1844
February 24, 1845	December 3, 1845	283	April 15, 1845	November 29	228	April 3, 1845
March 18, 1846	December 14, 1846	275	April 16, 1846	November 25	234	April 11, 1846
April 7, 1847	December 25, 1847	263	May 1, 1847	November 30	214	April 23, 1847
March 22, 1848	December 27, 1848	292	May 1, 1848	December 9	223	April 9, 1848
March 19, 1849	December 26, 1849	286	May 1, 1849	December 5	219	March 25, 1849
March 10, 1850	December 17, 1850	282	April 22, 1850	December 11	234	March 25, 1850
February 25, 1851	December 14, 1851	293	April 15, 1851	December 5	235	April 2, 1851
March 28, 1852	December 23, 1852	270	April 20, 1852	December 16	239	April 20, 1852
March 23, 1853	December 21, 1853	274	April 20, 1853	December 20	245	April 14, 1853
March 17, 1854	December 8, 1854	266	May 1, 1854	December 3	217	April 29, 1854
March 27, 1855	December 20, 1855	268	May 1, 1855	December 10	224	April 21, 1855
April 11, 1856	December 14, 1856	248	May 5, 1856	December 4	214	May 2, 1856

February 27, 1857	December 27, 1857	303	May 6, 1857	December 15	223	April 27, 1857
March 20, 1858	December 17, 1858	273	April 28, 1858	December 8	225	April 15, 1858
March 13, 1859	December 10, 1859	273	April 15, 1859	December 12	242	April 7, 1859
March 6, 1860	December 14, 1860	283	April 25, 1860	December 12	232	April 17, 1860
March 5, 1861	December 23, 1861	294	May 1, 1861	December 10	224	April 13, 1861
April 4, 1862	December 19, 1862	259	May 1, 1862	December 10	224	April 15, 1862
April 3, 1863	December 11, 1863	252	May 1, 1863	December 9	223	April 3, 1863
March 11, 1864	December 12, 1864	277	April 30, 1864	December 8	223	April 13, 1864
March 22, 1865	December 16, 1865	270	May 1, 1865	December 12	226	April 26, 1865
March 20, 1866	December 15, 1866	270	May 1, 1866	December 12	226	April 28, 1866
March 26, 1867	December 8, 1867	257	May 6, 1867	December 20	229	April 21, 1867
March 24, 1868	December 5, 1868	252	May 4, 1868	December 7	217	April 19, 1868
April 5, 1869	December 9, 1869	248	May 6, 1869	December 10	218	May 1, 1869
March 31, 1870	December 17, 1870	261	May 10, 1870	December 8	213	April 16, 1870
March 12, 1871	November 29, 1871	263	April 24, 1871	December 1	220	April 1, 1871
April 7, 1872	December 9, 1872	247	May 13, 1872	December 1	262	May 6, 1872
April 16, 1873	November 22, 1873	221	May 15, 1873	December 5	205	April 29, 1873
March 19, 1874	December 12, 1874	269	May 5, 1874	December 5	215	April 18, 1874
April 13, 1875	November 29, 1875	229	May 18, 1875	November 30 (by ice)	297	May 12, 1875
April 1, 1876	December 2, 1876	245	May 4, 1876	December 1	211	May 4, 1876
March 30, 1877	December 31, 1877	277	May 8, 1877	December 7	214	April 17, 1877
March 14, 1878	December 20, 1878	282	April 15, 1878	December 7	237	March 24, 1878
April 4, 1879	December 20, 1879	261	May 8, 1879	December 6	212	April 24, 1879
March 5, 1880	November 25, 1880	266	April 20, 1880	November 21 (by ice)	216	March 19, 1880
March 21, 1881	January 2, 1881	288	May 17, 1881	December 8	206	May 1, 1881
March 8, 1882	December 5, 1882	273	April 11, 1882	December 7	241	March 26, 1882
March 29, 1883	December 15, 1883	261	May 7, 1883	December 1	208	May 4, 1883
March 25, 1884	December 19, 1884	269	May 6, 1884	December 1	209	April 25, 1884
April 7. 1885	December 7, 1885	247	May 11, 1885	December 1	205	May 2, 1885
March 30, 1886	December 3, 1886	248	May 1, 1886	December 1	214	April 25, 1886
April 6, 1887	December 20, 1887	258	May 7, 1887	December 1	209	April 17, 1887
April 7, 1888	December 14, 1888	252	May 10, 1888	December 3	208	April 14, 1888
March 19, 1889	....	....	May 1, 1889	November 30	214	April 10, 1889
....	1890, not closed	365	April 28, 1890	November 30, 1890	217	March 31, 1890

STATEMENT *of the number of locks, their lift in feet, total lockage of each canal, etc., of all the canals in the State of New York.*

NAME OF CANAL.	Length in miles.	Lockage in feet.
Erie canal	351.78	654.80
Navigable feeders of same	3.35	....
Champlain canal	66.00	179.50
Pond above Troy dam	3.00	....
Glens Falls feeder and pond	12.00	132.00
Black River canal	35.33	1082.25
Black River feeder	13.47	....
Black River improvement	42.50	....
Oneida Lake canal	6.00	62.00
Oswego canal	38.00	154.85
Oneida river improvement	20.00	7.85
Seneca river towing-path	5.00	....
Baldwinsville canal	1.00	8.00
Cayuga and Seneca canal	22.77	76.61
Cayuga inlet	2.00	....
Total	622.20	2357.86

NAME OF CANAL.	Length in miles.	SIZE OF CANAL. Width on surface.	Width on bottom.	Depth of water.	NUMBER AND SIZE OF LOCKS. Number of locks.	Length between quoins.	Width in clear.	Average burden of boats.	Maximum burden of boats.
Erie canal	363	40	28	4	83	90	15	70	76
Enlargement of same	351¾	70	56	7	72	110	18	210	240
Oswego canal	38	40	24	4	18	90	15	70	76
Enlargement of same	38	70	56	7	18	110	18	210	240
Cayuga and Seneca canal	21	40	24	4	10	90	16	70	76
Enlargement of same	23	70	56	7	11	110	18	210	240
Champlain canal	66	50	35	5	20	110	18	85	120
Glens Falls feeder	12	50	35	5	12	100	18	80	85
Pond above Troy dam	3	. ..	....	....	1	....	....	....	.....
Black River canal and feeder	50	42	26	4	100	90	15	70	76
Black river improvement	42	....	....	....	1	110	18	70	76
Oneida river improvement	20	80	60	4½	2	120	30	70	76
Oneida Lake canal	7	70	56	7	7	110	18	220	220
Baldwinsville and Seneca tow-path	5¾	40	24	4	1	90	15	70	76

ERIE CANAL.

[Total cost of construction, $51,609,200.]

REMARKS.	Old canal (not now in existence).	Enlargement.
Construction authorized	April 15, 1817	May 11, 1835.
Construction commenced	July 4, 1817	August. 1836.
Construction completed	October 26, 1836	September, 1862.
Estimated cost of engineer prices	$4,926.738	$23,402,863.
Actual cost of construction	7,143,789	44,465,414.
Total feet of lockage	675½ feet	654 80-100 feet.
Length from Albany to Buffalo	363 miles	350½ miles.
Number locks and size of chambers	83 locks, 90x115	72 locks, 110x18.
Size of prism	40 and 28x4	70 and 56x7.
Maximum dimension of boats	78 62-100x14 46-100x3½, draft 1	98x17 5-12x6 feet draft.
Burden of boats	75 tons	240 tons.

LOCKS.

No. of lock.	Double or single.	Lift.	No. of Lock.	Double or single.	Lift.	No. of lock.	Double or single.	Lift.
1......	Double	15½	25.....	Double	8	49.........	Double	6
2......	Double	9½	26.....	Double	8	50.........	Double	6 11-12
3......	Double	11¼	27....	Double	8	51.........	Double	5½
4......	Double	71¼	28.....	Double	8	52,........	Double	11
5......	Double	10	29.....	Double	7	53.........	Double ...	6
6......	Double	10	30.....	Double	10½	54.........	Double	7½
7......	Double	10	31.....	Double	6	55.........	Double	6
8......	Double	10	32.....	Double	8	56.........	Double	10
9......	Double	10	33.....	Double	6	57.........	Double	8
10......	Double	10	34.....	Double	8	58.........	Double	8
11......	Double	10	35.....	Double	8	59.........	Double	8
12......	Double	10	36.....	Double	10	60.........	Double	10
13......	Double	10	37.....	Double	10	61.........	Double	9
14......	Double	10	38.....	Double	9½	62.........	Double	9
15......	Double	10	39.....	Double	10⅓	63.........	Double	9
16......	Double	10	40.....	Double	8	64.........	Double	10
17......	Double	10	41.....	Double	8	65.........	Double	10
18......	Double	10½	42.....	Double	8	66.........	Double	9
19......	Double	8½	43.....	Double	8	67 68 69 70 71 } Combined.	Double	55 10-12
20......	Double	10	44.....	Double	10½			
21......	Double	11½	45.....	Double	10½			
22......	Double	11½	46.....	Double	3			
23......	Double	8	47.....	Double	10½			
24......	Double	8	48.....	Double	10½	2 Gd. blk. Rk. & Buf.	Double	2

LOCATION OF LOCKS.

COUNTIES.	Numbers of locks.	COUNTIES.	Numbers of locks.
Albany....................	1 to 18, inclusive.	Onondaga	47 to 51, inclusive.
Saratoga..................	19 and 20.	Cayuga	52.
Schenectady.............	21 to 25, inclusive.	Wayne.........	53 to 60, inclusive.
Montgomery	26 to 34, inclusive.	Ontario	
Herkimer.................	35 to 45, inclusive.	Monroe	61 to 66, inclusive.
Oneida....................	46.	Orleans	
Madison		Niagara................	67 to 71, inclusive.

CHAMPLAIN CANAL AND GLENS FALLS FEEDER.

Construction authorized..	April 15, 1817.
Glens Falls feeder authorized	April, 1822.
Estimated cost of canal at engineers' prices.................. ...	$871,000.
Navigation opened from Fort Edward to Lake Champlain	November 24, 1819.
Canal completed from Waterford to Lake Champlain.............	1822.
Canal, cost of construction up to 1827................................	$921,011.
Feeder, cost of construction up to 1837.	$91,944.
Total cost of both included improvements, exclusive of ordinary repairs, June, 1868...	$2,378,910.
Number of locks on canal, 20; feeder, 13..........................	Size, 110x18 and 100x15.
Length of canal, 66 miles; feeder, 7 miles; pond, 5 miles.........	78 miles.
Size of prism, canal and feeder..	40 26x4.
Size authorized, chapter 213, Laws 1860	50 35x5.
Total cost, including improvement and enlargement, up to 1875..	$4,044,000.

LOCKS.

CHAMPLAIN CANAL.						GLENS FALLS FEEDER.			
No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.
1	10¾	8	8¾	15	8	1	10	8	10
2	10¾	9	10	16	7	2	10	9	10
3	8½	10	9¾	17	3¼	3	10	10	10
4	9	11	11¼	18	9	4	10	11	11
5	9	12	9	19	9	5	10	12	11
6	9	13	10¼	20	10	6	10	13	10
7	9¼	14	8			7	10		

BLACK RIVER CANAL FEEDER AND BLACK RIVER IMPROVEMENT.

Construction authorized	April 19, 1836.
Construction commenced	January, 1838.
Estimated cost at engineers' prices	$1,068,437.
Estimated cost at contract prices	$2,431,669.
Canal completed	1849.
Cost of construction	$3,581,954.
Number and size of locks	100 locks, 90x15.
Length of canal to Lyons Falls	35 miles.
Length of river to Carthage and fall	42 miles; 9¼ feet.
Size of prism of canal and feeder	42 and 28x4.
Length of navigable feeder, and fall	10½ miles; 6 10-100 feet.
Burden of boats	45 to 50 tons.
Lockage of canal	1,082¼ feet.

LOCKS.

No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.
1	10	23	10	45	10	67	10	89	10
2	10	24	10	46	10	68	9	90	10
3	10	25	10	47	10	69	9	91	12
4	10	26	10	48	10	70	9	92	10
5	10	27	10	49	10	71	10	93	10
6	10	28	10	50	10	72	10	94	10
7	10	29	10	51	10	73	10	95	10
8	11	30	10	52	10	74	10	96	10
9	12	31	10	53	10	75	10	97	10
10	11	32	10	54	10	76	10	98	10
11	11	33	10	55	10	77	10	99	10
12	11	34	10	56	10	78	10	100	10
13	8	35	10	57	10	79	10	101	10½
14	8	36	10	58	10	80	9	102	10¼
15	8	37	10	59	10	81	9	103	4
16	10	38	10	60	10	82	9	104	10
17	8	39	10	61	10	83	9	105	10
18	10	40	10	62	10	84	9	106	11
19	8	41	10	63	10	85	10	107	11
20	10	42	10	64	10	86	11½	108	12
21	10	43	10	65	10	87	10	109	12
22	10	44	10	66	10	88	10		

ONEIDA LAKE CANAL AND ONEIDA RIVER IMPROVEMENT.

REMARKS.	Oneida lake canal.	Oneida river improvement.
Construction authorized	March 22, 1832	April 29, 1839.
Estimated cost at engineer's prices,	$40,000......................	$100,049.
Construction completed	1836.........................	1850.
Cost of construction................	$450,678....................	$368,164.
Purchased of company by State	May 11, 1840................	For $50,000.
Enlargement of locks authorized...	Chapter 46, Laws of 1860..	
Number and size of new locks	7, 110x18....................	2, 120x30½.
Size of prism	40x26x4.....................	80x60x4½.
Length................................	7 miles	20 miles.
Feet of lockage......................	60¼ feet......	No. 1, 3 ft.; No. 2, 3¼ ft.

LOCKS.

PRESENT OLD LOCKS.						ENLARGED LOCKS AUTHORIZED.					
No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.
1......	7½	4......	10	6......	7½	1....	8½	4......	10½	6......	8
2.....	8½	5......	9¼	7......	6 1-12	2....	8¼	5......	9½	7......	7½
3......	9					3....	8				

OSWEGO CANAL.

[Total cost, $4,992,926.]

REMARKS.	Oswego canal.	Enlarged Oswego canal.
Construction authorized	April 20, 1825................	April 15, 1854.
Enlargement of locks................	....	Chapter 262, Laws of 1847
Estimated cost at engineer's prices,	$227,000......................	$1,926,336.
Estimated cost at contract prices...	437,000.......................	2,051,190.
Construction completed	December 10, 1828	September, 1862.
Cost of construction.................	$565,437......................	$4,427,589.
Number of locks, and size..........	18, 90x15.....................	17, 110x18.
Feet of lockage......................	154, 85 feet..................	154, 85 feet.
Average cost of one lock	$10,000.......................	$31,000.
Size of prism of canal...............	40 and 26x4..................	70 and 56x7 feet.
Guard locks	Six	Five.
Burden of boats......................	50 to 75 tons................	230 tons.
Length of canal	38 miles......................	38 miles.

LOCKS.

No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.	No.	Lift.
1...........	11	4 }......	9.68	8.......	11¼	12.......	11¼	16.......	8⅔
2...........	11	5 }		9.......	7¼	13.......	5.65	17.......	10½
3...........	10½	6.........	7	10.......	9	14.......	9½	18.......	9¼
		7.........	5.866	11.......	11⅔	15.......	5¾		

CAYUGA AND SENECA CANAL — CAYUGA INLET.

[Total cost, $2,232,632.]

REMARKS.	Cayuga and Seneca canal.	Cayuga inlet.
Construction authorized, enlargement of locks	April 20, 1825	May 25, 1836.
Enlargement of prism		April 15, 1854.
Estimated cost at engineer's prices	$811,188	$150,000.
Estimated cost at contract prices	795,273	160,396.
Canal completed	November 15, 1828	September, 1862.
Cost of construction	$2,010,320	$214,000.
Number of locks and size	11, 110x18	1, 110x18.
Feet of lockage	83½ feet	
Length and size of prism		24⅜ miles, 70 and 56x7.

LOCKS.

No.	Lift.	No.	Lift.	No.	Lift.	No	Lift.	No.	Lift.
1	7.28	4	9	6	9.60	8	5.70	10	10
2	7	5	9	7	6	9	10	11	3
3	10								

A List of the principal places on the canals, and their distance from each other, as adopted by the Canal Board.

ERIE CANAL.

NAMES OF PLACES.	Albany.	West Troy	Schenectady.	Fultonville.	Little Falls.	Utica.	Rome.	Syracuse.	Jordan.	Montezuma.	Lyons.	Palmyra.	Rochester.	Brockport.	Albion.	Medina.	Lockport.	Tonawanda.	Lower B. Rock.	Buffalo.
Adams' Basin	274	267	244	218	187	164	149	108	89	175	57	42	15	5	19	29	47	66	74	78
Albany	....	7	30	56	87	110	125	166	105	199	217	232	259	279	293	303	321	340	348	352
Albion	293	286	263	237	206	183	168	127	108	94	76	61	34	14	....	10	28	47	55	59
Auriesville	53	46	26	3	34	57	72	113	132	146	164	179	206	226	240	250	268	287	295	299
Belle Isle	172	165	142	116	85	62	47	6	13	27	45	60	87	107	121	131	149	168	176	180
Black Rock	349	342	319	293	262	239	224	183	164	150	132	117	90	70	56	46	28	9	1	3
Bolivar	152	145	122	96	65	42	27	14	33	47	65	80	107	127	141	151	169	188	196	200
Brighton	256	249	226	200	169	146	131	90	71	57	39	24	3	23	37	47	65	84	92	96
Brockport	279	272	249	223	192	169	154	113	94	80	62	47	20	....	14	24	42	61	69	73
Brockville	288	281	258	232	201	178	163	122	103	89	71	56	29	9	5	15	33	52	60	64
Brockways	269	262	239	213	182	159	144	103	84	70	52	37	10	10	24	34	52	71	79	83
Buffalo	352	345	322	296	265	242	227	186	167	153	135	120	93	73	59	49	31	12	4	....
Bushnell's Basin	248	241	218	192	161	138	123	82	63	49	31	16	11	31	45	55	73	92	100	104
Camillus	175	168	145	119	88	65	50	9	10	24	42	57	84	104	118	128	146	165	173	177
Canajoharie	68	61	38	12	19	42	57	98	117	131	149	164	191	211	225	235	253	272	280	284
Canastota	145	138	115	89	58	35	20	21	40	54	72	87	114	134	148	153	176	195	203	207
Canaseraga Landing	150	143	120	94	63	40	25	16	35	49	67	82	109	129	143	153	171	190	198	202
Canton	180	173	150	124	93	70	55	14	5	19	37	52	79	99	113	123	141	160	168	172
Cartersville	250	243	220	194	163	140	125	84	65	51	33	18	9	29	43	53	71	90	98	102
Centreport	192	185	162	130	105	82	67	26	7	7	25	40	67	87	101	111	129	148	156	160
Chittenango	151	144	121	95	64	41	27	15	34	48	66	81	108	128	142	152	170	189	197	201
Clyde	210	203	180	154	123	100	85	44	25	11	7	22	49	69	83	93	111	130	138	142
Cohoes	11	4	19	45	76	99	114	155	174	188	206	221	248	268	282	292	310	329	337	341
Cold Spring	186	179	156	130	99	76	61	20	1	13	31	46	73	93	107	117	135	154	162	166
Cooley's Basin	277	270	247	221	199	67	152	111	92	78	60	45	18	2	16	26	44	63	71	75
Crescent	14	7	16	42	73	96	141	152	171	185	203	218	245	265	279	289	307	326	334	338
Dunbarton	136	129	106	80	49	26	11	30	49	63	81	96	123	143	157	167	185	204	212	216
Durhamville	140	133	110	84	53	30	15	26	45	59	77	92	119	139	153	163	181	200	208	212
Eagle Harbor	296	289	266	240	209	186	171	130	111	97	79	64	37	17	3	7	25	44	52	66
East Arcadia	220	213	190	164	133	110	95	54	35	21	3	12	39	59	73	83	101	120	128	132
East Canada Creek	82	75	52	26	5	28	43	84	103	117	135	150	177	197	211	221	239	258	266	270
Fairport	244	237	214	188	157	134	119	78	59	45	27	12	15	35	49	59	77	96	104	108
Fort Plain	71	64	41	15	16	39	54	95	114	128	146	161	188	208	222	232	250	269	277	281

ERIE CANAL — (*Continued*).

NAMES OF PLACES.	Albany.	West Troy.	Schenectady.	Fultonville.	Little Falls.	Utica.	Rome.	Syracuse.	Jordan.	Montezuma.	Lyons.	Palmyra.	Rochester.	Brockport.	Albion.	Medina.	Lockport.	Tonawanda.	Lower B. Rock.	Buffalo.
Frankfort	101	94	71	45	14	9	24	65	84	98	116	131	158	178	192	202	220	239	247	251
Fullman's Basin	245	238	215	189	158	135	120	79	60	46	28	13	14	34	48	58	76	95	103	107
Fultonville	56	49	26	....	31	54	69	110	129	143	161	176	203	223	237	247	265	284	292	296
Fergusons	106	99	76	50	19	4	19	60	79	93	111	126	153	173	187	197	215	234	242	246
Gaines' Basin	295	388	265	239	208	185	170	129	110	96	78	63	36	16	2	8	26	15	53	57
Gasport	315	308	285	259	228	205	190	149	130	116	98	83	56	36	22	12	6	25	33	37
Geddes	168	161	138	112	81	58	143	2	17	31	49	64	91	111	125	135	153	172	180	184
Greece (six-mile grocery)	266	259	236	210	179	156	141	100	81	67	49	34	7	13	27	37	55	74	82	86
Higginsville	135	128	105	79	48	25	10	31	50	64	82	97	124	144	158	168	186	205	213	217
Hindsburgh	289	282	259	233	202	179	164	123	104	90	72	57	30	10	4	14	32	51	59	63
Hoffman's Ferry	40	33	10	16	47	70	85	126	145	159	177	192	219	239	253	263	281	300	308	312
Holley	284	277	254	228	197	174	159	118	99	85	67	52	25	5	9	19	37	56	64	68
Hulberton	287	280	257	231	200	177	162	121	102	88	70	55	28	8	6	16	34	53	61	65
Ilion	98	91	68	42	11	12	27	68	87	101	119	134	161	181	195	205	223	242	250	254
Jordan	185	178	155	129	98	75	60	19	....	14	32	47	74	94	108	118	136	155	163	167
Junction	7	....	23	49	80	103	118	159	178	192	210	225	252	272	286	296	314	333	341	345
Kirkville	155	148	125	99	68	45	30	11	30	44	62	77	104	124	138	148	166	185	193	197
Knappsville	241	234	211	185	154	131	116	75	56	42	24	9	18	38	52	62	80	99	107	111
Knowlesville	299	292	269	243	212	189	174	133	114	100	82	67	40	20	6	4	22	41	49	53
Lenox	143	136	113	87	56	33	18	23	42	56	74	89	116	136	150	160	178	197	205	209
Limestone Feeder	159	152	129	103	72	49	34	7	26	40	58	73	100	120	134	144	162	181	189	193
Little Falls	87	80	57	31	...	23	38	79	98	112	130	145	172	192	206	216	334	253	261	265
Lock Berlin	214	207	184	158	127	104	89	48	29	15	3	18	45	65	79	89	107	126	134	138
Lockport	321	314	291	265	234	211	196	155	136	122	104	89	62	42	28	18	....	19	27	31
Lockville	323	216	193	167	136	113	98	57	38	24	6	9	36	56	70	80	98	117	125	129
Lock No. 65	253	246	223	197	166	143	128	87	68	54	36	21	6	26	40	50	68	87	95	99
Lodi	165	158	135	109	78	55	40	1	20	34	52	67	94	114	128	138	156	175	183	187
Loomis	127	130	107	81	56	27	12	29	48	62	81	95	122	142	156	166	184	203	211	215
Lower Black Rock	348	341	318	292	261	238	223	182	163	149	131	116	89	69	55	45	27	8	....	4
Lyons	217	210	187	161	130	107	92	51	32	18	....	15	42	62	76	86	104	123	131	135
Mabees	314	307	284	258	227	204	189	148	129	115	97	82	55	35	21	11	7	26	34	38
Macedon	236	229	206	180	149	126	111	70	51	37	19	4	23	43	57	67	85	104	112	116
Manlius	158	151	128	102	71	48	33	8	27	41	59	74	101	121	135	145	163	182	190	194
Martinsville	336	329	306	280	249	226	211	170	151	137	119	104	77	57	43	33	15	4	12	16
Medina	303	296	273	247	216	193	178	137	118	104	86	71	44	24	10	....	18	37	45	49

Middleport	309	302	279	253	222	199	184	143	124	110	92	77	50	30	16	6	12	31	39	43
Millards	318	311	288	262	231	208	193	152	133	119	101	86	59	39	25	15	3	22	30	34
Mindenville	78	71	48	22	9	32	47	83	107	121	139	154	181	201	215	225	243	262	270	274
Mohawk	95	88	65	39	8	15	30	71	90	104	122	137	164	184	198	208	226	245	253	257
Montezuma	199	192	169	143	112	89	74	33	14	....	18	33	60	80	94	104	122	141	149	153
Newark	224	217	194	168	137	114	99	58	39	25	7	8	35	55	69	79	97	116	124	128
New Boston Landing	149	142	119	93	62	39	24	17	26	50	68	83	110	130	144	154	172	191	199	203
New London	131	134	101	75	44	21	6	35	54	68	86	101	128	148	162	172	190	209	217	201
Nine-mile Creek	174	167	144	118	87	64	49	8	11	25	43	58	85	105	119	129	147	166	174	178
Orangeport	316	309	286	260	229	206	191	150	131	117	99	84	57	37	23	13	5	24	32	36
Oriskany	117	110	87	61	30	7	8	49	68	82	100	115	142	162	176	186	204	203	231	235
Orville Feeder	161	154	131	105	74	51	36	5	24	38	56	71	98	118	132	142	160	179	187	191
Palmyra	232	225	202	176	145	122	107	66	47	33	15	....	27	47	61	71	89	108	116	120
Pendleton	328	321	298	272	241	218	203	162	143	129	111	96	69	49	35	25	7	12	20	24
Peru	182	175	152	126	95	72	57	16	3	17	35	50	77	97	111	121	139	158	166	170
Picardsville	383	366	303	277	246	223	208	167	148	134	116	101	74	54	40	30	12	7	15	19
Pitt Lock	205	198	175	149	118	85	80	39	20	6	12	27	54	74	88	98	116	135	143	147
Pittsford	251	244	221	195	164	141	126	85	66	52	34	19	8	28	42	52	70	89	97	101
Pool's Brook	154	147	124	98	67	44	29	12	31	45	63	78	105	125	139	149	167	186	194	198
Port Byron	194	187	164	138	107	84	69	28	9	5	23	38	65	85	99	109	127	146	154	158
Port Gibson	227	220	197	171	140	117	102	61	42	28	10	5	32	52	66	76	94	113	121	125
Port Jackson	46	39	16	10	41	64	79	120	139	153	171	186	213	233	247	257	275	294	302	306
Reynale's Basin	313	306	283	257	226	203	188	147	128	114	96	81	54	34	20	10	8	27	35	39
Rochester	259	252	229	203	172	149	134	93	74	60	42	27	....	20	34	44	62	81	80	93
Rome	125	118	95	69	38	15	....	41	60	74	92	107	134	154	168	178	196	215	223	227
Schenectady	30	23	....	26	57	80	95	136	155	169	187	202	229	249	263	273	291	310	318	322
Schoharie Creek	51	44	21	5	36	59	74	115	134	148	166	181	208	228	242	252	270	289	297	301
Shelby Basin	306	299	276	250	219	196	181	140	121	107	89	74	47	27	13	3	15	34	42	46
Spencerport	271	264	241	215	184	161	146	105	86	72	54	39	12	8	22	32	50	69	77	81
Spraker's	65	58	35	9	22	45	60	101	120	134	152	167	194	214	228	238	256	275	283	287
St. Johnsville	76	69	46	20	11	34	49	90	109	123	141	156	183	203	217	227	245	264	272	276
Sulphur Springs G. Lock	326	319	296	270	239	216	201	160	141	127	109	94	67	47	33	23	5	14	22	26
Syracuse	166	159	135	110	79	56	41	....	19	33	51	66	93	113	127	137	155	174	182	186
Tonawanda	340	333	310	284	253	230	315	172	155	141	123	108	81	61	47	37	19	....	8	12
Upper Aqueduct	26	19	4	30	61	84	99	140	159	173	191	206	233	253	267	277	295	314	322	336
Utica	110	103	80	54	23	....	15	56	75	89	107	122	149	169	183	193	211	230	230	242
Wayneport	239	232	209	183	152	129	114	73	54	40	22	7	20	40	54	64	82	101	109	113
Weedsport	190	183	160	134	103	80	65	24	5	9	27	42	69	89	103	113	131	150	158	162
West Troy	7	....	23	49	80	103	118	159	178	192	210	225	252	272	286	296	314	333	341	345
Whitesboro	114	107	84	58	27	4	11	52	71	85	103	118	145	165	179	189	207	226	234	238
Yatesville	62	55	32	6	25	48	63	104	123	137	155	170	197	217	231	241	259	278	286	290
York Mills	113	106	83	57	26	3	12	53	72	86	104	119	146	166	180	190	208	227	235	239

CHAMPLAIN CANAL.

NAMES OF PLACES.	DISTANCE FROM		
	Place to place.	Albany.	Whitehall.
Albany	....	....	73
West Troy	7	7	66
Junction	...	7	66
Waterford	3	12	51
Mechanicville	8	20	53
Stillwater village	4	24	49
Bleecker's Basin	2	26	43
Wilbur's Basin	2	28	45
Van Duzen's Landing	5	33	40
Schuylerville	3	36	37
Saratoga bridge	2	38	35
Fort Miller	3	41	32
Moses kill	3	44	29
Fort Edward	5	49	24
Glens Falls Feeder	2	51	22
Baker's Basin	1	52	21
Smith's Basin	5	57	16
Fort Ann	4	61	12
Comstock's Landing	4	65	.....
Whitehall	8	73	.....

GLENS FALLS FEEDER — CHAMPLAIN CANAL.

NAMES OF PLACES.	Distance from place to place.
Champlain canal	.....
Sandy Hill	2
Glens Falls	3
Head of the feeder	2
Head of the pond	5

From Junction to Whitehall	64
Length of Glens Falls Feeder	12
Length of pond above Troy dam	3
Total	79

OSWEGO CANAL.

NAMES OF PLACES.	DISTANCE FROM		
	Place to place.	Syracuse.	Oswego.
Syracuse	....	....	38
Salina	2	2	36
Liverpool	3	5	33
Mud Lock	2	7	31
Cold Spring	1	8	30
New Bridge	5	13	25
Three River Point	2	15	23
Phœnix	2	17	21
Sweet's Lock	3	20	18
Ox Creek	2	23	15
Fulton	4	27	11
Braddock's Rapid	4	31	7
Tiffany's Landing	4	35	8
High Dam	1	36	2
Oswego	2	38	....

CAYUGA AND SENECA CANAL.

NAMES OF PLACES.	DISTANCE FROM		
	Place to place.	Monte-zuma.	Geneva.
Montezuma	....	....	21
Seneca river	5	5	16
S. Dermont	2	7	14
Seneca Falls	3	10	11
Chamberlain's Mills	2	12	9
Waterloo	2	14	7
Teal's	5	19	2
Geneva	2	21	0
Lateral canal to East Cayuga village, two miles	2	....	....

ONEIDA LAKE CANAL AND FEEDER.

Extends from the Erie canal at Higgins, four miles west of New London, to the Oneida lake, as follows:

	Miles.
Canal proper, from Higgins to Wood creek	3¾
Wood creek, with a towing-path to the Oneida creek	2¼

BLACK RIVER CANAL.

NAMES OF PLACES.	DISTANCE FROM		
	Place to place.	Rome.	Boonville.
Rome	....	....	25
Ridge Mills	2	2	23
Lock No. 7	3	5	20
Walworth's Storehouse	1	6	19
Westernville	3	9	16
Wells Brook Aqueduct	2	11	14
Stringer's Creek	2	13	12
Lansing kill	1	14	11
Lock No. 31	2	16	9
Lansing kill dam or feeder	1	17	8
Lower Falls, Lansing kill	2	19	6
Upper Falls, Lansing kill	2	21	4
Lock No. 70	2	23	2
Boonville	2	25	....
Sugar river	3	28	3
Little Falls, Black river	1	29	4
Port Leyden	3	32	7
Lock No. 97	1	33	8
Lyons' Falls	2	35	10
Hawkinsville, on feeder (three miles from Boonville)	....	28	3
A. Lee's, on feeder	2	30	5
R. B. Miller's, on feeder	1	31	6
State dam, on feeder	4	35	10
Head of reservoir	2	37	12

ONEIDA RIVER IMPROVEMENT.

Names of places.	Distance from place to place.
Three River Point	....
Peter Scott creek	4
Oak Orchard	4
Caughdenoy	7
Brewerton	5

GENERAL SUMMARY.

	Miles.
Erie canal	352
Albany basin	1
Feeders	8
	361
Champlain canal	66
Glens Falls feeder	12
Pond above Troy dam	3
	81

	Miles.
Black River canal	35
Black River feeder and reservoir	12
Black River improvement	42
	89
Oneida Lake canal and feeder	7
Oswego canal	38
Baldwinsville side-cut	1
Oneida river improvement	20
Seneca river towing-path	5¾
Seneca river improvement	12¼
	77
Cayuga and Seneca canal	23
Total	638

REPORT

OF THE

SUPERINTENDENT OF PUBLIC WORKS

UPON THE

TRADE AND TONNAGE OF THE CANALS

FOR THE YEAR 1890.

REPORT.

The whole number of tons carried upon the canals of this State during the season of 1890 was 5,246,102 tons, and was composed of the following described class of articles:

	Tons.
Product of the forest	1,397,862
Agriculture	1,201,916
Manufactures	139,310
Merchandise	769,672
Other articles	1,737,342
Total	5,246,102

And was composed of the following described articles:

	Tons.
Boards and scantlings	1,201,544
Shingles	2,504
Timber	80,486
Staves	7,017
Wood	97,253
Ashes (pot and pearl)	7,261
Ashes (leached)	1,797
Pork	105
Bacon	2
Cheese	1,134
Butter	1
Lard	25
Hides	127
Flour	3,489
Wheat	353,738
Rye	21,657
Corn	616,702
Corn meal	1,160
Barley	90,754
Barley malt	20,855
Oats	48,438

	Tons.
Bran and shipstuff	1,985
Peas and beans	2,006
Apples	221
Potatoes	6,328
Dried fruit	568
Cotton	47
Hemp	1,278
Clover and grass seed	629
Flaxseed	30,668
Domestic spirit	283
Oil, meal and cake	832
Leather	1
Furniture	163
Bar and pig lead	316
Pig-iron	29,839
Bloom and bar iron	3,440
Castings and ironware	1,168
Domestic cotton	87
Domestic salt	83,329
Foreign salt	9,852
Sugar	16,179
Molasses	4,358
Coffee	113
Nails, spikes and horseshoes	831
Iron and steel	25,252
Railroad iron	5,800
Flint, enamel, crockery, etc	778
All other merchandise	716,360
Stone, lime and clay	655,933
Phosphate	8,734
Anthracite coal	762,536
Bituminous coal	67,618
Petroleum	2,883
Iron ore	202,072
Sundries	37,566
Total	5,246,102

ANNUAL ACCOUNT *of property (in tons of* 2,000 *pounds each), cleared on the canals each week during the season of* 1890.

DAYS.	THE FOREST — PRODUCT OF WOOD.						
	Leached ashes.	Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.
First to seventh	......	37,139	90	2,214	210	1,084	238
Eighth to fourteenth	......	25,312	70	1,137	....	795	223
Fifteenth to twenty-second	......	27,550	115	1,910	66	1,865	105
Twenty-third to close	......	49,118	94	1,886	95	2,066	515
Total, May	......	139,119	369	7,147	371	5,810	1,081
First to seventh	......	33,929	39	2,006	113	694	134
Eighth to fourteenth	......	31,339	105	9,868	239	4,934	327
Fifteenth to twenty-second	......	55,686	138	2,241	260	3,214	243
Twenty-third to close	......	46,941	145	2,798	483	1,733	105
Total, June	......	167,896	427	16,913	1,095	10,575	809
First to seventh	......	34,466	182	1,860	200	2,251	43
Eighth to fourteenth	......	45,303	71	4,928	625	11,141	389
Fifteenth to twenty-second	576	43,763	....	2,656	240	675	1,016
Twenty-third to close	957	44,179	224	3,916	348	4,032	915
Total, July	1,533	167,711	467	13,360	1,413	18,099	2,363

Annual account of property in tons cleared — (Continued).

DAYS.	THE FOREST — PRODUCT OF WOOD.						
	Leached ashes.	Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.
First to seventh	......	38,973	134	1,387	218	1,974	279
Eighth to fourteenth	......	39,305	57	3,085	317	1,750	223
Fifteenth to twenty-second	250	45,492	12	4,218	234	3,027	....
Twenty-third to close	......	45,491	135	5,445	207	3,861	....
Total, August	250	169,261	338	14,130	976	10,612	502
First to seventh	......	41,734	93	2,562	315	2,601	41
Eighth to fourteenth	......	37,396	70	2,197	511	2,092	564
Fifteenth to twenty-second	......	49,140	205	5,315	423	4,052	280
Twenty-third to close	......	44,883	28	2,627	135	3,822	159
Total, September	......	173,153	396	12,701	1,384	12,567	1,044
First to seventh	......	42,206	48	1,462	405	3,021	130
Eighth to fourteenth	......	49,347	196	1,551	393	3,124	737
Fifteenth to twenty-second	.....	51,937	13	4,715	....	3,018	139
Twenty-third to close	......	57,392	23	2,497	422	5,023	232
Total, October	.. ...	200,882	280	10,225	1,219	14,186	1,238

First to seventh	......	49,140	41	720	....	1,915	224
Eighth to fourteenth	......	54,426	36	750	105	2,587	....
Fifteenth to twenty-second	14	57,564	64	3,282	54	3,589	....
Twenty-third to close	......	21,231	67	1,145	3	6,905	....
Total, November	14	182,361	208	5,897	162	14,996	224
Agent O'Brien	......	1,162	19	108	397	10,408	....
Total for the year	1,797	1,201,544	2,504	80,486	7,017	97,253	7,261

Annual account of property in tons cleared — (Continued).

DAYS.	AGRICULTURE — PRODUCT OF ANIMALS.						AGRICULTURE — VEGETABLE FOOD.		
	Pork.	Bacon.	Cheese.	Butter.	Lard, tallow and lard oil.	Hides.	Flour.	Wheat.	Rye.
First to seventh	5	......	......	......	......	......	95	30,895	5,733
Eighth to fourteenth	1	......	......	......	......	......	110	15,969	1,407
Fifteenth to twenty-second	3	......	......	......	......	35	94	23,558	3,962
Twenty-third to close	1	......	......	......	......	......	78	4,686	1,248
Total, May	10	......	......	......	......	35	377	75,088	12,350
First to seventh	......	......	......	......	......	......	105	5,060	......
Eighth to fourteenth	2	......	50	......	......	20	124	8,051	588
Fifteenth to twenty-second	......	......	110	......	......	......	116	12,315	......
Twenty-third to close	......	......	55	......	......	......	43	11,885	954
Total, June	2	......	215	......	......	20	388	37,311	1,542
First to seventh	......	......	52	......	......	......	99	21,022	1,171
Eighth to fourteenth	1	......	52	......	......	......	86	18,910	402
Fifteenth to twenty-second	2	......	52	......	......	39	103	14,520	719
Twenty-third to close	......	......	52	......	......	......	91	17,291	233
Total, July	3	......	208	......	......	39	379	71,743	2,525

First to seventh	1	......	49	......	......	......	73	10,386	1,186
Eighth to fourteenth	20	......	52	......	......	......	83	12,483	119
Fifteenth to twenty-second	......	......	50	......	......	......	128	13,470	436
Twenty-third to close	3	......	54	......	......	15	140	16,588	....
Total, August	24	......	205	......	......	15	424	52,927	1,741
First to seventh	......	......	29	......	......	......	98	8,406	....
Eighth to fourteenth	1	......	45	......	......	13	41	7,243	....
Fifteenth to twenty-second	21	......	50	......	2	......	87	5,233	....
Twenty-third to close	17	......	32	......	8	......	116	6,875	....
Total, September	39	......	156	......	10	13	342	27,757	....
First to seventh	2	......	......	......	......	1	162	12,161	....
Eighth to fourteenth	1	......	36	......	......	......	29	9,032	727
Fifteenth to twenty-second	......	......	......	......	2	......	86	16,375	....
Twenty-third to close	7	2	41	1	4	......	529	17,283	728
Total, October	10	2	77	1	6	1	806	54,851	1,455
First to seventh	......	......	.....	......	3	......	71	14,310	915
Eighth to fourteenth	10	......	69	......	2	......	135	9,519	884
Fifteenth to twenty-second	6	......	203	......	......	......	255	4,904	245
Twenty-third to close	1	......	1	......	4	4	312	5,328	....
Total, November	17	......	273	......	9	4	773	34,061	2,044
Total for the year	105	2	1,134	1	25	127	3,489	353,738	21,657

Annual account of property in tons cleared — (Continued).

DAYS.	AGRICULTURE — VEGETABLE FOOD.									
	Corn.	Corn meal.	Barley.	Barley malt.	Oats.	Bran and ship stuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.
First to seventh..........	62,057	.....	449	844	729	59	16	....	......	137
Eighth to fourteenth	28,628	.....	302	470	1,674	28	.....	....	......	40
Fifteenth to twenty-second	29,291	.....	120	587	2,691	50	.....	....	......	44
Twenty-third to close. ...	10,007	.....	120	476	2,773	72	10	....	......	32
Total, May	129,983	.....	991	2,377	7,867	209	26	....	......	253
First to seventh..........	24,092	.....	1,238	85	5,797	43	239	....	......	....
Eighth to fourteenth	15,563	4	610	485	6,199	34	.....	....	......	18
Fifteenth to twenty-second	23,850	.....	444	442	1,778	65	393	....	13	1
Twenty-third to close.....	17,110	.....	663	303	2,541	47	56	....	12	.....
Total, June..........	80,615	4	2,955	1,315	16,313	189	688	....	25	19
First to seventh..........	32,579	.....	145	445	4,372	25	67	....	......	.....
Eighth to fourteenth	29,345	.....	......	435	3,505	56	.....	....	......	.....
Fifteenth to twenty-second	30,622	.....	......	486	2,381	35	.....	....	......	.....
Twenty-third to close.....	28,285	.....	......	380	816	......	43	....	......	.....
Total, July	120,831	.....	145	1,746	11,074	116	110	....	......	.....

First to seventh	21,738	.....	239	428	160	17	.....	...	......	.....
Eighth to fourteenth	8,350	.....	......	183	818	38	28	....	......	.....
Fifteenth to twenty-second.	20,180	.....	......	505	304	86	.....	....	.....	....
Twenty-third to close	21,403	.....	238	536	1,107	61	.....	....	......	36
Total, August........	71,673	.....	477	1,652	2,389	202	28	....	......	36
First to seventh..........	15,282	.....	490	698	904	34	.....	...	......	121
Eighth to fourteenth......	10,586	.....	709	869	253	3	.....	....	......	.....
Fifteenth to twenty-second.	24,147	....	1,786	878	1,096	45	63	....	......	.....
Twenty-third to close.....	19,978	.....	10,862	6,120	690	145	61	....	......	.....
Total, September.....	69,993	.....	13,847	8,565	2,943	227	124	....	......	121
First to seventh	32,736	76	8,484	406	577	25	180	....	......	41
Eighth to fourteenth	30,762	.....	12,752	541	449	79	136	....	......	.....
Fifteenth to twenty-second.	15,200	.....	10,339	793	1,026	68	127	....	2	.....
Twenty-third to close	16,390	1,080	8,727	187	446	195	344	15	420	18
Total, October........	95,088	1,156	40,302	1,927	2,498	367	787	15	422	59
First to seventh..........	15,712	.....	5,462	616	688	24	.....	....	784	80
Eighth to fourteenth......	21,037	.....	9,636	1,442	2,403	91	.....	32	1,022	.....
Fifteenth to twenty-second.	11,286	.....	10,285	1,045	1,540	288	243	169	3,511	.....
Twenty-third to close	484	.....	6,654	170	721	272	.....	5	564	.....
Total, November......	48,519	.....	32,037	3,273	5,352	675	243	206	5,881	80
Total for the year.....	616 702	1,160	90,754	20,855	48,438	1,985	2,006	221	6,327	568

Annual account of property in tons cleared — (Continued)

DAYS.	ALL OTHER AGRICULTURAL PRODUCTS.				MANUFACTURES.			
	Cotton.	Hemp.	Clover and grass seed	Flaxseed.	Domestic spirits.	Oil meal and cake.	Leather.	Furniture.
First to seventh	......	......	......	......	216	137	......	4
Eighth to fourteenth	......	15	......	......	1	......	......	2
Fifteenth to twenty-second	......	36	11	......	......	149	......	......
Twenty-third to close	......	54	204	......	......	......	......	12
Total, May	......	105	215	......	217	286	......	18
First to seventh	......	234	142	......	......	......	......	......
Eighth to fourteenth	15	195	113	......	......	......	......	5
Fifteenth to twenty-second	......	27	26	244	1	......	......	......
Twenty-third to close	......	......	27	......	......	187	......	3
Total, June	15	456	308	244	1	187	......	8
First to seventh	......	......	......	......	2	......	......	5
Eighth to fourteenth	......	......	......	......	......	76	......	......
Fifteenth to twenty-second	......	......	......	......	......	......	......	5
Twenty-third to close	......	......	......	......	1	......	......	......
Total, July	......	......	......	......	3	76	......	10

First to seventh	......	......	......	......	......	15	......	9
Eighth to fourteenth	......	......	......	1,191	39	......	......	5
Fifteenth to twenty-second	......	376	......	714	......	......	......	......
Twenty-third to close	20	165	......	1,427	......	3	......	......
Total, August	20	541	......	3,332	39	18	......	14
First to seventh	......	176	......	2,611	......	......	......	4
Eighth to fourteenth	......	......	......	953	......	......	......	50
Fifteenth to twenty-second	......	......	81	2,847	......	......	......	3
Twenty-third to close	......	......	......	2,911	......	89	......	2
Total, September	......	176	81	9,322	......	89	......	60
First to seventh	......	......	12	1,184	......	15	1	......
Eighth to fourteenth	......	......	13	1,624	......	......	......	......
Fifteenth to twenty-second	......	......	......	4,311	......	......	......	3
Twenty-third to close	......	......	......	4,402	......	10	......	......
Total, October	......	......	25	11,521	......	25	1	3
First to seventh	......	......	......	1,682	......	......	......	......
Eighth to fourteenth	12	......	......	1,427	14	73	......	......
Fifteenth to twenty second	......	......	......	2,022	......	......	......	......
Twenty-third to close	......	......	......	1,117	9	78	......	50
Total, November	12	......	......	6,248	23	151	......	50
Total for the year	47	1,278	629	30,667	283	832	1	163

Annual account of property in tons cleared—(Continued).

DAYS.	MANUFACTURES.						
	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron ware.	Domestic cottons.	Domestic salt.	Foreign salt.
First to seventh	......	554	112	226	......	10,706	149
Eighth to fourteenth	......	818	......	1	......	762	....
Fifteenth to twenty-second	219	276	129	....	......	1,704	....
Twenty-third to close	......	761	487	....	......	2,357	99
Total, May	219	2,409	727	227	......	15,529	248
First to seventh	......	1,176	112	11	......	2	186
Eighth to fourteenth	20	969	......	220	27	3,025	40
Fifteenth to twenty-second	......	1,868	494	....	60	3,721	120
Twenty-third to close	......	978	392	....	......	3,482	376
Total, June	20	4,991	998	231	87	10,230	722
First to seventh	......	1,298	......	....	......	2,297	115
Eighth to fourteenth	......	1,341	......	....	......	2,493	224
Fifteenth to twenty-second	......	2,767	381	....	......	2,136	1,458
Twenty-third to close	......	3,415	......	115	......	4,201	1,443
Total, July	......	8,821	381	115	......	11,127	3,240

First to seventh	23	642	......	30	......	2,104	131
Eighth to fourteenth	......	1,289	162	5	......	2,742	587
Fifteenth to twenty-second	......	1,733	134	9	......	3,996	776
Twenty-third to close	28	1,814	......	127	......	8,606	291
Total, August	51	5,478	296	171	......	17,448	1,875
First to seventh	......	1,352	270	1	......	1,781	431
Eighth to fourteenth	......	1,374	......	....	......	2,194	265
Fifteenth to twenty-second	......	1,158	34	103	......	1,119	433
Twenty-third to close	......	1,025	......	....	......	1,819	392
Total, September	......	4,909	204	104	......	6,913	1,521
First to seventh	......	1,755	......	112	......	2,664	328
Eighth to fourteenth	......	1,521	......	6	......	497	319
Fifteenth to twenty-second	......	2,598	358	101	......	1,624	75
Twenty-third to close	......	2,005	476	....	......	3,554	773
Total, October	......	7,879	834	219	......	8,339	1,495
First to seventh	26	1,361	......	101	......	2,277	691
Eighth to fourteenth	......	1,590	......	....	......	2,824	......
Fifteenth to twenty-second	......	1,558	......	....	......	3,323	150
Twenty-third to close	......	843	......	....	......	5,319	......
Total, November	26	5,352	......	101	......	13,743	841
Total for the year	316	39,839	3,440	1,168	87	83,329	9,852

Annual account of property in tons cleared — (Continued).

DAYS.	MERCHANDISE.					
	Sugar.	Molasses.	Coffee.	Nails, spikes and horse-shoes.	Iron and steel.	Railroad iron.
First to seventh	121	143	23	10	3,280	....
Eighth to fourteenth	16	9	....	....	616	....
Fifteenth to twenty-second	145	3	....	1	566	....
Twenty-third to close	140	83	....	127	592	....
Total, May	422	238	23	138	5,054	....
First to seventh	897	....	90	62	764	....
Eighth to fourteenth	201	81	....	5	1,487	....
Fifteenth to twenty-second	146	297	....	150	841	....
Twenty-third to close	281	113	....	....	877	....
Total, June	1,525	491	90	217	3,969	....
First to seventh	540	470	....	54	650	....
Eighth to fourteenth	632	113	....	1	821	....
Fifteenth to twenty-second	1,583	46	....	50	1,144	....
Twenty-third to close	632	560	....	....	1,270	2
Total, July	3,387	1,189	....	105	3,885	2

First to seventh	418	520	....	....	747	....
Eighth to fourteenth	162	262	....	....	442	....
Fifteenth to twenty-second	853	137	....	13	422	1,043
Twenty-third to close	907	222	....	1	1,380	252
Total, August	2,340	1,141	....	14	2,991	1,295
First to seventh	707	197	....	....	338	211
Eighth to fourteenth	1,589	228	....	....	866	280
Fifteenth to twenty-second	927	337	....	....	130	364
Twenty-third to close	726	....	....	....	1,635	765
Total, September	3,949	762	....	....	2,969	1,620
First to seventh	1,061	108	....	16	275	403
Eighth to fourteenth	1,189	244	....	111	857	286
Fifteenth to twenty-second	1,220	42	....	....	966	476
Twenty-third to close	938	....	....	4	1,267	1,343
Total, October	4,408	394	....	131	3,365	2,508
First to seventh	112	138	....	57	930	129
Eighth to fourteenth	2	4	....	167	826	84
Fifteenth to twenty-second	9	....	....	1	1,117	162
Twenty-third to close	25	1	....	1	147	....
Total, November	148	143	....	226	3,020	375
Total for the year	16,179	4,358	113	831	25,253	5,800

Annual account of property in tons cleared — (Continued).

DAYS.	MERCHANDISE.		OTHER ARTICLES.		MINERAL COAL.	
	Flint, enamel, crockery and glassware.	All other merchandise.	Phosphate.	Stone, lime and clay.	Anthracite.	Bituminous.
First to seventh	190	21,373	....	37,433	11,285	2,513
Eighth to fourteenth	....	15,806	....	13,817	11,644	609
Fifteenth to twenty-second	... .	9,313	....	18,079	9,526	682
Twenty-third to close	12	24,907	336	22,895	30,294	1,057
Total, May	202	71,399	336	92,224	62,749	4,861
First to seventh	59	20,689	336	19,615	19,280	1,160
Eighth to fourteenth	56	24,660	106	18,025	20,076	738
Fifteenth to twenty-second	119	33,033	.. . ...	18,239	24,653	659
Twenty-third to close	12	41,445	754	23,112	38,437	1,676
Total, June	246	119,827	1,196	78,991	102,446	4,233
First to seventh	....	27,737	610	17,118	31,246	1,155
Eighth to fourteenth	67	31,520	112	17,907	21,795	1,598
Fifteenth to twenty-second	... .	36,825	954	18,638	25,082	1,408
Twenty-third to close	....	49,786	231	28,812	34,397	1,117
Total, July	67	145,868	1,907	82,475	112,520	5,278

First to seventh	3	39,821	112	19,533	24,889	2,509
Eighth to fourteenth	5	38,832	354	25,008	44,941	1,241
Fifteenth to twenty-second	....	44,189	137	17,515	16,635	2,134
Twenty-third to close	....	45,004	143	30,332	30,559	2,799
Total, August	8	167,846	746	92,388	117,024	8,683
First to seventh	....	27,237	....	18,328	32,535	2,167
Eighth to fourteenth	7	23,131	....	25,400	14,147	1,638
Fifteenth to twenty-second	89	22,456	7	19,938	20,667	2,304
Twenty-third to close	....	25,860	....	28,128	34,546	1,870
Total, September	96	98,684	7	91,794	101,895	7,979
First to seventh	....	26,069	493	22,225	18,785	1,559
Eighth to fourteenth	41	18,987	....	17,887	17,874	2,751
Fifteenth to twenty-second	3	14,535	673	26,888	18,734	10,147
Twenty-third to close	70	21,145	986	36,730	48,790	4,208
Total, October	114	80,736	2,152	103,730	104,183	18,665
First to seventh	45	9,614	669	19,258	17,073	3,314
Eighth to fourteenth	....	5,610	941	27,004	31,303	4,941
Fifteenth to twenty-second	....	7,684	780	23,309	42,885	4,752
Twenty-third to close	....	5,859	....	25,560	70,258	4,912
Total, November	45	28,767	2,390	95,131	161,719	17,919
Agent O'Brien	....	3,233	....	19,200	....	....
Total for the year	778	716,360	8,734	655,933	762,536	67,618

Annual account of property in tons cleared — (Concluded).

DAYS.	OTHER ARTICLES.			Miles.	Total.
	Petroleum.	Iron ore.	Sundries.		
First to seventh	320	476	1,190	320,414	232,455
Eighth to fourteenth	33	7,325	893	166,222	128,533
Fifteenth to twenty-second	42	162	631	181,957	133,700
Twenty-third to close	24	7,756	949	153,360	166,422
Total, May	419	15,719	3,663	821,953	661,110
First to seventh	261	2,839	191	133,993	141,675
Eighth to fourteenth	142	4,844	553	146,222	154,163
Fifteenth to twenty-second	....	8,474	675	186,532	195,156
Twenty-third to close	262	13,276	1,353	178,918	212,917
Total, June	665	29,433	2,772	645,665	703,911
First to seventh	34	8,940	869	204,457	192,119
Eighth to fourteenth	18	11,177	307	190,667	205,451
Fifteenth to twenty-second	10	9,677	1,754	211,597	201,803
Twenty-third to close	57	10,944	1,180	226,796	239,915
Total, July	119	40,738	4,110	833,517	839,288

First to seventh	265	6,815	1,104	176,015	176,932
Eighth to fourteenth	6	5,066	1,025	155,830	190,275
Fifteen to twenty-second	222	3,282	768	166,562	183,482
Twenty-third to close	58	7,263	2,140	208,686	228,861
Total, August	551	22,426	5,037	707,093	779 550
First to seventh	4	4,698	1,005	150,261	167,362
Eighth to fourteenth	85	9,623	998	143,096	145,421
Fifteenth to twenty-second	258	11,833	1,552	177,084	179,462
Twenty-third to close	109	7,739	1,773	159,446	205,947
Total, September	456	33,893	5,328	629,887	698,192
First to seventh	29	8,811	3,051	184,150	191,079
Eighth to fourteenth	375	8,594	1,454	184,716	184,521
Fifteenth to twenty-second	16	9,434	1,881	193,460	197,925
Twenty-third to close	33	14,077	2,986	226,148	255,803
Total, October	453	40,916	9,372	788,474	829,328
First to seventh	16	8,033	1,657	164,292	157,888
Eighth to fourteenth	39	5,673	2,674	156,364	189,594
Fifteenth to twenty-second	91	4,295	1,317	132,185	192,008
Twenty-third to close	74	946	1,636	50,838	160,706
Total, November	220	18,947	7,284	503,679	700,196
Agent O'Brien	....	....	....	....	34,527
Total for the year	2,883	202,072	37,566	4,930,268	5,246,102

ANNUAL STATEMENT *showing the total tons of each article of way freight going east, and the total tons of all articles of way freight going east, at all offices during the season of* 1890.

OFFICES.	Boats, number of miles cleared.	THE FOREST — PRODUCT OF WOOD.					AGRICULTURE — PRODUCT OF ANIMALS.	
		Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Pork.	Cheese.
West Troy	18,705	16,335	1	3,850	......	6,895	......	....
Syracuse	104,109	1,469	50	......	232	1,991	8	7
Rochester	46,716	17	......	......	125	......	......	....
Tonawanda	43,851	65,414	1,217	18,472	......	238	......	....
Buffalo	314,899	29,960	400	1,437	5,067	......	......	....
Waterford	87,625	192,596	......	10,391	......	19,741	......	1
Whitehall	1,342	859	......	14,297	587	13,174	......	....
Oswego	21,179	34,800	228	38	594	5,200	......	....
Geneva	12,583	1,137	......	3,780	......	.....	......	....
Boonville	49,363	18,831	8	1,147	......	10,198	......	1,112
Total	700,372	361,418	1,904	43,403	6,605	57,437	8	1,120

Annual statement of way freight going east — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.										
	Flour.	Wheat.	Rye.	Corn.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Apples.	Potatoes.	Dried fruit.
West Troy	5	......	......	400	......	2,610	......	......	38	12	18
Syracuse	715	5,419	......	261	2,228	9,323	109	423	. ..	233	.....
Rochester. ...	......	6,486	......	....	2,613	859	......	17	....	......	.....
Tonawanda....	......	......	......	....	......	......	......	......	....	......	.....
Buffalo	195	59,016	1,856	127,239	20,556	......	16,656	210	....	......	.....
Waterford	98	......	247	....	......	......	16	......	126	2,632	.....
Whitehall	......	......	......	....	......	......	......	......	....	......	.....
Oswego	545	10,111	......	10,408	2,842	......	8	96	....	......	.....
Geneva	......	1,290	......	....	696	758	......	......	....	......	.....
Boonville	......	......	......	....	......	......	......	......	....	......	.....
Total......	1,558	82,322	2,103	138,308	28,935	13,550	16,789	746	164	2,868	18

Annual statement of way freight going east — (Continued).

OFFICES.	All other agricultural products — Flaxseed.	MANUFACTURES.						MERCHANDISE.			
		Domestic spirits.	Oil meal and cake.	Furniture.	Pig iron.	Castings and iron ware.	Domestic salt.	Sugar.	Iron and steel.	Flint, enamel, crockery and glassware.	All other merchandize.
West Troy	33	......	752	..	....	220	......	....	246	....	9,451
Syracuse	......	......	......	11	83	......	54,405	....	......	50	12,156
Rochester	......	......	......	....	....	168	12,966	....	47	....	11,207
Tonawanda	......	......	......	....	....	......	......	....	......	....	....
Buffalo	......	......	25	....	....	6	......	....	......	....	144
Waterford	......	3	......	1	....	......	......	1	......	....	39,999
Whitehall	......	......	......	....	....	......	......	....	......	....	....
Oswego	......	......	......	....	....	.....	......	....	......	1	1,400
Geneva	......	......	......	....	....	......	......	....	......	45	....
Boonville........	......	......	......	....	....	......	......	....	......	....	2,240
Total	33	3	777	12	83	394	67,371	1	293	96	76,597

Annual statement of way freight going east — (Concluded).

OFFICES.	OTHER ARTICLES.						Total.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
West Troy	23,337	16,792	....	101	......	596	81,692
Syracuse	11,737	202,042	7,600	57	......	3,773	314,382
Rochester	62,066	....	514	......	......	9	97,094
Tonawanda	....	....	....	......	......	......	75,441
Buffalo	1,133	....	14,642	6	......	751	279,299
Waterford	38,791	....	....	.....	146	656	305,436
Whitehall	4,379	....	....	......	......	454	33,750
Oswego	6,922	2,862	....	......	......	955	77,010
Geneva	....	6,042	17,865	......	......	195	31,763
Boonville	270	....	....	......	......	374	34,225
Total	148,135	227,738	40,621	164	146	7,763	1,329,992

ANNUAL STATEMENT *showing the total tons of each article of way freight going west, and the total tons of all articles of way freight going west during season of* 1890.

OFFICES.	Boats, number of miles cleared.	THE FOREST — PRODUCT OF WOOD.						AGRICULTURE — PRODUCT OF ANIMALS.		
		Boards and scanting.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Pork.	Cheese.	Butter.
Albany	65,326	4,964	......	108	....	......	532	....	....	.....
West Troy	91,188	3,444	5	136	...	280	......	4	....	....
Syracuse	156,377	2,077	8	540	10	12,031	......	5	14	1
Rochester	26,627	33	......	......	2	2,276	609	....	....	.....
Tonawanda	40,477	350	......	428	....	952	......	....	....	.....
Buffalo	....	....	......	......	....	......	......	....	....	.....
Waterford	2,785	239	......	640	....	......	......	....	....	.....
Whitehall	....	....	......	......	...	......	......	....	....	.....
Oswego	....	....	......	......	....	......	......	....	....	.....
Geneva	9,918	113	......	1,512	....	......	......	....	....	.....
Boonville	....	649	......	......	....	......	......	22	....	.....
Total	392,698	11,869	13	3,364	12	15,539	1,141	31	14	1

Annual statement of way freight going west — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.			AGRICULTURE — VEGETABLE FOOD.								
	Lard, tallow and lard oil.	Wool.	Hides.	Flour.	Wheat.	Rye.	Corn.	Corn meal.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.
Albany.......	......	....	....	172	43	119	1,860	......	....	......	1,504	398
West Troy....	......	....	28	191	....	504	1,454	......	....	......	150	....
Syracuse	26	1	5	1,487	534	6	1,101	1,160	426	......	174	477
Rochester	......	....	....	......	....	....	207	......	....	......	......	....
Tonawanda ...	......	....	....	......	....	....	......	......	....	......	......	....
Buffalo.......	......	....	....	......	....	....	......	......	....	......	......	....
Waterford....	......	....	....	15	....	....	......	......	....	......	72	17
Whitehall	......	....	....	......	....	....	......	......	....	......	......	....
Oswego	......	....	....	......	....	....	......	......	....	......	......	....
Geneva	......	....	....	......	....	....	......	......	....	1,173	......	....
Boonville.....	......	....	....	32	....	....	1,884	......	....	......	157	111
Total.	26	1	33	1,897	577	629	6,506	1,160	426	1,173	2,057	1,003

Annual statement of way freight going west — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.				All other agricultural products — Cotton.	MANUFACTURES.						
	Peas and beans.	Apples.	Potatoes.	Dried fruit.		Domestic spirits.	Oil meal and cake.	Leather.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.
Albany	42	....	....	....	....	....	3	....	7	....	1,110	112
West Troy	....	....	2	1	20	1	....	....	2	23	6,867	358
Syracuse	....	13	225	....	....	4	....	1	68	....	129	....
Rochester	....	....	....	....	....	....	....	....	....	....	....	....
Tonawanda	....	....	....	....	....	....	....	....	....	....	....	....
Buffalo	....	....	....	....	....	....	....	....	....	....	....	....
Waterford	....	....	....	....	....	....	....	....	....	....	22	....
Whitehall	....	....	....	....	....	....	....	....	....	....	....	....
Oswego	....	....	....	....	....	....	....	....	....	....	....	....
Geneva	....	....	....	....	....	....	....	....	....	....	....	....
Boonville	....	15	....	....	....	8	....	....	57	....	.. .	....
Total	42	28	227	1	20	13	3	1	134	23	8,128	470

Annual statement of way freight going west — (Continued).

OFFICES.	MANUFACTURES.				MERCHANDISE.							
	Castings and iron ware.	Domestic cottons.	Domestic salt.	Foreign salt.	Sugar.	Molasses.	Coffee.	Nails, spikes and horse-shoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany....	370	12	......	24	118	.....	....	......	355	.....	101	2,148
West Troy.	.....	.....	......	378	286	20	....	20	2,925	2	50	5,392
Syracuse ..	139	.....	13,634	.....	39	2	1	9	92	.....	12	29,062
Rochester .	.....	.....	......	.....	....	.....	....	......	3	.....	246	8,302
Tonawanda	....	.....	......	.....	....	.....	....	......	......	....	....	....
Buffalo....	.....	.....	......	.....	....	.....	....	......	......	....	....	....
Waterford .	103	.....	......	.....	8	.....	....	......	......	.....	....	828
Whitehall .	.....	.....	......	.....	....	.....	....	......	.....	.....	....	....
Oswego ...	.....	.....	......	.....	....	.....	....	......	......	.....	....	....
Geneva ...	.....	.....	......	.....	....	.....	....	......	......	.....	....	....
Boonville..	2	.....	46	.....	43	1	...	7	2	.....	2	1,074
Total....	614	12	13,680	402	404	23	1	36	3,377	2	411	46,806

Annual statement of way freight going west — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and superphosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	28,006	4,670	35,208	....	......	......	220	82,206
West Troy	37,050	2,695	89,006	952	115	698	7,844	160,906
Syracuse	56,066	7	147,576	5,029	158	......	1,397	273,746
Rochester	22,917	....	25,650	....	......	......	....	60,038
Tonawanda	116,983	....	....	....	......	......	1,618	120,538
Buffalo	....	....	....	....	......	......	....	....
Waterford	699	....	28,501	1,459	25	......	318	32,946
Whitehall	....	....	....	....	......	......	....	....
Oswego	....	....	....	....	......	......	....	....
Geneva	19,816	....	8,717	325	......	......	....	31,656
Boonville	3,727	2	1,467	188	107	......	2	9,605
Total	285,264	7,374	336,125	7,953	405	698	11,399	771,638

ANNUAL STATEMENT *showing the total tons of each article of way freight going east and west, and the total tons of all articles of way freight going east and west during season of* 1890.

OFFICES.	Boats, number of miles cleared.	The Forest — Product of Wood.						Agriculture — Product of Animals.		
		Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Pork.	Cheese.	Butter.
Albany	65,326	4,964	......	108	......	......	532	....	......	.....
West Troy	109,893	19,779	6	3,986	......	7,175	......	4	......	.....
Syracuse	260,567	3,546	58	540	242	14,022	......	13	21	1
Rochester	73,343	50	......	......	127	2,276	609	....	......	.....
Tonawanda	84,328	65,764	1,217	8,900	......	1,190	......	....	......	.....
Buffalo	314,899	29,960	400	1,437	5,067	......	......	....	......	.....
Waterford	90,410	192,835	......	11,031	......	19,741	......	....	1	.....
Whitehall	1,342	859	.....	14,297	587	13,174	......	....	......	.....
Oswego	21,179	34,800	228	38	594	5,200	......	....	......	.....
Geneva	22,501	1,250	......	5,292	......	......	......	....	......	.....
Boonville	49,363	19,480	8	1,147	......	10,198	......	22	1,112	.....
Total	1,093,151	373,287	1,917	46,776	6,617	72,976	1,141	39	1,134	1

Total tons of each article of way freight going east and west for season of 1890 — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.			AGRICULTURE — VEGETABLE FOOD.							
	Lard, tallow and lard oil.	Wool.	Hides.	Flour.	Wheat.	Rye.	Corn.	Corn meal.	Barley.	Barley malt.	Oats.
Albany	......	...	....	172	43	119	1,860	......	......	......	1,504
West Troy	......	....	28	196	......	504	1,854	.....	......	2,610	150
Syracuse	26	1	5	2,202	5,953	6	1,362	1,160	2,654	9,323	283
Rochester	......	....	....	......	6,486	......	....	......	2,613	859	....
Tonawanda	......	....	....	......	......	......	207	......	......	......	....
Buffalo	......	....	..	195	59,016	1,856	127,239	......	20,556	......	16,656
Waterford	......	....	....	113	......	247	....	......	......	......	88
Whitehall	......	....	....	......	......	......	....	......	......	......	....
Oswego	....	....	....	545	10,111	......	10,408	......	2,842	......	8
Geneva	......	....	....	......	1,290	......	....	......	696	1,931	....
Boonville	......	....	....	32	......	......	1,884	......	......	......	157
Total	26	1	33	3,455	82,899	2,732	144,814	1,160	29,361	14,723	18,846

Total tons of each article of way freight going east and west for season of 1890 — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.					ALL OTHER AGRICULTURAL PRODUCTS.		MANUFACTURES.		
	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.	Cotton.	Flaxseed.	Domestic spirits.	Oil-meal and cake.	Leather.
Albany	398	42	....	......	....	....	......	......	3	....
West Troy	......	......	38	14	19	20	33	1	752	....
Syracuse	900	......	13	458	....	...	......	4	......	1
Rochester	17	......	....	......	....	....	......	......	......	....
Tonawanda	......	......	....	......	....	....	......	......	......	....
Buffalo	210	......	....	......	....	....	......	......	25	....
Waterford	17	......	126	2,623	....	....	.....	3	......	....
Whitehall	......	......	....	......	....	....	......	......	......	....
Oswego	96	......	....	......	....	....	......	......	......	....
Geneva	......	......	....	.....	....	....	......	......	......	....
Boonville	111	......	15	......	....	....	......	8	......	....
Total	1,749	42	192	3,095	19	20	33	16	780	1

Total tons of each article of way freight going east and west for season of 1890 — (Continued).

OFFICES.	MANUFACTURES.							
	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron-ware.	Domestic cottons.	Domestic salt.	Foreign salt.
Albany	7	......	1,110	112	370	12	......	24
West Troy	2	23	6,867	358	220	......	......	378
Syracuse	79	......	212	......	139	......	68,039	......
Rochester	......	......	......	......	168	......	12,966	......
Tonawanda	......	......	......	......	......	......	......	......
Buffalo	......	......	......	......	6	......	......	......
Waterford	1	......	22	......	103	......	......	......
Whitehall	......	......	......	......	......	......	......	......
Oswego	......	......	......	......	......	......	......	......
Geneva	......	......	......	......	......	......	......	......
Boonville	57	......	......	......	2	......	46	......
Total	146	23	8,211	470	1,008	12	81,051	402

Total tons of each article of way freight going east and west for season of 1890 — (Continued).

OFFICES.	MERCHANDISE.							
	Sugar.	Molasses.	Coffee.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	118	......	......	....	355	......	101	2,148
West Troy	286	20	......	20	3,171	2	50	14,843
Syracuse	39	2	1	9	92	......	62	41,218
Rochester	......	......	......	....	50	......	246	19,509
Tonawanda	......	......	......	....	.....	......	....	....
Buffalo	......	......	......	....	......	......	....	144
Waterford	9	......	......	....	......	......	....	40,827
Whitehall	......	......	......	....	......	......	....	....
Oswego	......	......	......	....	......	......	1	1,400
Geneva	......	......	......	....	......	......	....	....
Boonville	43	1	......	7	2	......	47	3,3
Total	495	23	1	36	3,670	2	507	123,403

Total tons of each article of way freight going east and west for season of 1890 — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and superphosphates.	Anthracite.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	28,006	4,670	35,208	......	....	......	220	82,206
West Troy	60,387	2,695	105,798	952	216	698	8,440	242,595
Syracuse	67,803	7	349,618	12,629	215	......	5,170	588,128
Rochester	84,983	....	25,650	514	....	......	9	157,132
Tonawanda	116,983	....	....	......	....	......	1,618	195,879
Buffalo	1,133	....	....	14,642	6	......	751	279,299
Waterford	39,490	....	28,501	1,459	25	146	974	338,382
Whitehall	4,379	....	....	......	....	......	454	33,750
Oswego	6,922	....	2,862	......	....	......	955	77,010
Geneva	19,816	....	14,759	18,190	....	......	195	63,419
Boonville	3,997	2	1,467	188	107	......	376	43,830
Total	433,899	7,374	563,863	48,574	569	844	19,162	2,101,630

TOTAL TONS *of each article of through freight going east, and total tons of all articles of through freight going east during season of* 1890.

OFFICES.	Boats, number of miles cleared.	THE FOREST — PRODUCT OF WOOD.					AGRICULTURE — VEGETABLE FOOD.		
		Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, leached.	Wheat.	Rye.	Corn.
Tonawanda	673,927	556,754	432	16,272	......	......	....	......	....
Buffalo	1,359,947	36,099	62	....	......	250	270,515	15,047	471,195
Whitehall........	316,637	128,525	......	248	5,482	......	....	......	....
Oswego..........	67,041	59,779	90	....	......	1,533	267	4,635	....
Boonville	96,086	54,952	2	15,440	2,990	......	....	......	....
Total	2,513,638	836,109	586	31,960	8,472	1,783	270,782	19,682	471,195

Total tons of each article of through freight going east, etc. — (Continued).

OFFICE.	AGRICULTURE — VEGETABLE FOOD.						All other agricultural products — Flaxseed.	MANUFACTURES.		
	Barley.	Barley malt.	Oats.	Peas and beans.	Apples.	Potatoes.		Furniture.	Pig iron.	Bloom and bar iron.
Tonawanda	......	......	......	......	......	......	......	......	......	......
Buffalo	38,007	4,152	28,546	......	......	......	30,386	......	6,201	......
Whitehall	......	348	......	6	49	1,613	......	4	7,451	1,801
Oswego	23,797	1,543	......	717	......	......	......	......	......	......
Boonville	......	......	......	......	......	1,617	......	......	......	......
Total	61,804	6,043	28,546	723	49	3,230	30,386	4	13,652	1,801

Total tons of each article of through freight going east, etc.—(Concluded).

OFFICES.	Manufactures — Castings and ironware.	MERCHANDISE.		OTHER ARTICLES.					Total.
		Iron and steel.	All other merchandise.	Stone, lime and clay.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Tonawanda	......	......	....	....	....	....	......	......	573,458
Buffalo	100	......	....	1,195	11,229	645	......	1,089	914,718
Whitehall	......	56	467,537	1,093	....	....	201,227	1,709	817,149
Oswego	......	......	800	225	....	....	......	......	93,386
Boonville	......	......	1,650	....	....	....	......	......	76,651
Total	100	56	469,987	2,513	11,229	645	201,227	2,798	2,475,362

TOTAL TONS *of each article of through freight going west, and total tons of all articles of through freight going west during season of* 1890.

OFFICES.	Boats, number of. Miles cleared.	THE FOREST — PRODUCT OF WOOD.					AGRICULTURE — PRODUCT OF ANIMALS.	
		Boards and scantling.	Timber.	Wood.	Ashes, pot and pearl.	Ashes leached.	Pork.	Hides.
Albany	350,836	453	808	......	6,054	14	4	....
West Troy	931,717	2,004	......	694	......	......	17	94
Waterford.....................	66,878	509	256	112	......	......	32	....
Total	1,349,431	2,966	1,064	806	6,054	14	53	94

Total tons of each article and total tons of all articles going west, etc.— (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.						ALL OTHER AGRICULTURAL PRODUCTS.		
	Flour.	Oats.	Bran and shipstuffs.	Peas and beans.	Potatoes.	Dried fruit.	Hemp.	Clover and grass seed.	Flaxseed.
Albany	....	....	......	481	......	128	591	81	244
West Troy	2	16	......	1,364	2	436	798	548	....
Waterford	....	25	85	......	1	....	......	....	....
Total	2	41	85	1,845	3	564	1,389	629	244

Total tons of each article and total tons of all articles going west, etc.— (Continued).

OFFICES.	MANUFACTURES.								
	Domestic spirits.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and ironware.	Domestic cottons.	Domestic salt.	Foreign salt.
Albany	......	12	......	11,711	1,034	58	......	......	1,135
West Troy	271	......	293	5,430	213	......	87	2,127	5,673
Waterford	......	......	......	706	......	1	......	149	2,614
Total	271	12	293	17,847	1,247	59	87	2,276	9,422

Total tons of each article and total tons of all articles going west, etc. — (Continued).

OFFICES.	MERCHANDISE.							
	Sugar.	Molasses.	Coffee.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	1,257	1,041	23	....	3,527	3,622	22	26,954
West Troy	13,248	2,522	90	100	17,784	2,092	245	87,036
Waterford	1,085	772	.....	695	426	84	5	6,258
Total	15,590	4,335	113	795	21,737	5,798	272	120,248

Total tons of each article and total tons of all articles going west, etc.— (Concluded).

OFFICES.	OTHER ARTICLES.						Total.
	Stone, lime and clay.	Rock and super-phosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Sundries.	
Albany	52,184	711	8,312	792	410	449	122,112
West Troy	131,880	653	87,790	1,664	1,360	15,231	381,764
Waterford	16,549	....	102,069	5,439	....	842	138,714
Total	200,613	1,364	108,171	7,895	1,770	16,522	642,590

TOTAL TONS *of each article of through freight, and the total tons of all articles of through freight going east and west from each office during the season of* 1890.

OFFICES.	Boats, number of miles cleared.	THE FOREST—PRODUCT OF WOOD.						AGRICULTURE—PRODUCT OF ANIMALS.	
		Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	Pork.	Hides.
Albany	350,836	453	......	808	.....	6,054	14	4	....
West Troy	931,717	2,004	......	......	694	......	......	17	94
Tonawanda	673,927	556,754	432	16,272	......	......	......	......	....
Buffalo	1,359,947	36,099	62	......	......	......	250	......	....
Waterford	66,878	509	......	256	112	......	......	32	....
Whitehall	316,637	128,525	......	248	5,482	......	......	......	....
Oswego	67,041	59,779	90	......	......	......	1,533	......	....
Boonville	96,086	54,952	2	15,440	2,990	......	......	......	....
Total	3,863,069	839,075	586	33,024	9,278	6,054	1,797	53	94

Total tons of each article of through freight going east and west, etc.— (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.									
	Flour.	Wheat.	Rye.	Corn.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.
Albany	....	....	......	....	......	......	......	......	481	.....
West Troy	2	....	......	....	......	......	16	......	1,364	.....
Tonawanda	....	....	......	....	......	......	......	......	......	.....
Buffalo	....	270,515	15,047	471,195	38,007	4,152	28,456	......	......	.....
Waterford	....	....	......	....	......	......	25	85	......	.....
Whitehall	....	....	......	....	......	348	......	......	6	49
Oswego	....	267	4,635	....	23,797	1,543	......	......	717	.....
Boonville	....	....	......	....	......	......	......	......	......	.....
Total	2	270,782	19,682	471,195	61,804	6,043	28,587	85	2,568	49

Total tons of each article of through freight going east and west, etc. — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.		ALL OTHER AGRICULTURAL PRODUCTS.			MANUFACTURES.						
	Potatoes.	Dried fruit.	Hemp.	Clover and grass seed.	Flaxseed.	Domestic spirits.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron ware.
Albany	......	128	591	81	244	......	12	......	11,711	1,034	58
West Troy	2	436	798	548	......	271	....	293	5,430	213	......
Tonawanda	......	...	......	....	......	......	....	......	......	......	......
Buffalo	......	...	......	....	30,386	......	....	......	6,201	......	100
Waterford	1	....	......	....	......	......	....	......	706	......	1
Whitehall......	1,613	....	......	....	......	......	4	......	7,451	1,801	......
Oswego........	......	....	......	....	......	......	....	......	......	......	......
Boonville	1,617	....	......	....	......	......	...	......	......	......	......
Total	3,233	564	1,389	629	30,630	271	16	293	31,499	3,048	159

Total tons of each article of through freight going east and west, etc.— (Continued).

OFFICES.	MANUFACTURES.			MERCHANDISE.							
	Domestic cottons.	Domestic salt.	Foreign salt.	Sugar.	Molasses.	Coffee.	Nails, spikes and horse-shoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandize.
Albany	.....	......	1,135	1,257	1,041	23	......	3,527	3,622	22	26,954
West Troy	87	2,127	5,673	13,248	2,522	90	100	17,784	2,092	245	87,036
Tonawanda	.....	......	.....	......	......	....	......	......	......	....	....
Buffalo	.....	......	.....	......	......	....	......	......	......	....	....
Waterford	.....	149	2,614	1,085	772	....	695	426	84	5	6,258
Whitehall	.....	......	.....	......	......	....	......	56	......	....	467,537
Oswego	.....	......	.....	......	......	....	......	......	......	....	800
Boonville	.....	......	.....	......	......	....	......	......	......	....	1,650
Total	87	2,276	9,422	15,590	4,335	113	795	21,793	5,798	272	590,235

Total tons of each article of through freight going east and west, etc. — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and super-phosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	52,184	711	8,312	792	410	....	449	122,112
West Troy	131,880	653	87,790	1,664	1,360	....	15,231	381,764
Tonawanda	....	....	....	......	......	....	....	573,458
Buffalo	1,195	....	....	11,229	645	....	1,089	914,718
Waterford	16,549	....	102,069	5,439	......	....	842	138,714
Whitehall	1,093	....	....	......	......	201,227	1,709	817,149
Oswego	225	....	....	.....	......	....	....	93,386
Boonville	....	....	....	......	......	....	....	76,651
Total	203,126	1,364	198,171	19,124	2,415	201,227	19,320	3,117,952

TOTAL TONS *east and west cleared on all canals during the season.*

OFFICES.	Boats. number of miles cleared.	The forest — fur and peltry.	THE FOREST — PRODUCT OF WOOD.						
			Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Ashes. leached.
		Pounds.							
Albany	416,162	......	5,417	......	916	......	......	6,586	14
West Troy	1,041,610	......	21,783	6	3,986	......	7,188	......	....
Syracuse	260,567	500	3,546	58	540	242	14,022	......	....
Rochester	73,343	......	50	......	......	127	2,276	609	....
Tonawanda	758,255	......	622,618	1,649	25,172	.....	1,190	......	....
Buffalo	1,674,846	......	66,059	462	1,437	5,067	......	......	250
Waterford	157,288	......	193,344	......	11,287	......	19,853	......	....
Whitehall	317,979	......	129,382	......	14,545	587	18,656	......	....
Oswego	88,220	......	94,579	318	38	594	5,200	......	1,533
Geneva	23,501	......	1,250	......	5,292	......	......	......	....
Boonville	145,449	......	62,026	6	16,587	......	18,463	......	....
Agent O'Brien	....	......	1,162	19	108	397	10,408	......	....
Total	4,957,220	500	1,201,216	2,518	79,908	7,014	97,256	7,195	1,797

Total tons east and west cleared on all canals during the season — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.						AGRICULTURE — VEGETABLE FOOD.				
	Pork.	Cheese.	Butter.	Lard, tallow and lard oil.	Wool.	Hides.	Flour.	Wheat.	Rye.	Corn.	Corn meal.
Albany	4	......	....	......	....	....	172	43	119	1,860	....
West Troy	21	......	...	......	....	122	198	... ...	504	1,854	....
Syracuse.	13	21	1	26	1	5	2,202	5,953	6	1,362	1,160
Rochester	....	......	....	......	....	...	......	6,486	......	....	....
Tonawanda	....	......	....	......	....	....	......	....	......	207	....
Buffalo	....	......	....	......	....	....	195	329,531	16,903	598,434	....
Waterford.	32	1	...	......	....	....	113	....	247	... .	....
Whitehall	....	......	....	......	....	....	......	... .	......	....	....
Oswego	....	......	....	......	....	....	545	10,378	4,635	10,408	....
Geneva	....	......	....	......	....	....	......	1,290	......	....	....
Boonville	22	1,112	....	......	....	....	36	....	......	1,819	....
Agent O'Brien	....	......	....	......	....	....	......	....	......	....	....
Total	92	1,134	1	26	1	127	3,461	353,681	22,414	615,944	1,160

Total tons east and west cleared on all canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.								ALL OTHER AGRICULTURAL PRODUCTS.			
	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.	Cotton.	Hemp.	Clover and grass seed.	Flaxseed.
Albany.....	......	......	1,504	398	523	....	......	128	20	591	81	244
West Troy..	......	2,610	166	......	759	38	16	455	....	798	548	33
Syracuse ...	2,654	9,323	283	900	......	13	458	....	....	.....	......	......
Rochester ..	2,613	859	......	17	......	...	......	....	....	.....	......	......
Tonawanda .	......	......	......	......	......	....	......	....	....	.....	......	......
Buffalo.....	58,563	4,152	45,202	210	......	....	......	...	....	.....	......	30,386
Waterford ..	......	......	113	102	......	126	2,624	....	....	.....	......	......
Whitehall...	348	......	......	......	6	49	1,613	....	....	.....	......	......
Oswego.....	26,639	1,543	8	96	717	....	......	....	....	.....	......	......
Geneva	696	1,931	......	......	......	....	......	....	....	.....	......	......
Boonville...	......	......	157	111	......	15	1,617	....	....	.....	......	......
Agt. O'Brien	......	......	......	......	......	...	......	....	....	.....	......	......
Total ..	91,513	20,418	47,433	1,834	2,005	241	6,328	583	20	1,389	629	30,663

Total tons east and west cleared on all canals during the season — (Continued).

OFFICES.	MANUFACTURES.										
	Domestic spirits.	Oil meal and cake.	Leather.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron ware.	Domestic cottons.	Domestic salt.	Foreign salt.
Albany	......	3	.....	19	......	12,821	1,146	428	12	......	1,159
West Troy	272	752	.....	2	316	12,297	571	220	87	2,127	6,051
Syracuse	4	......	1	79	......	212	......	139	......	68,039	....
Rochester	......	......	.....	....	......	......	......	168	......	12,966	....
Tonawanda	......	......	.....	....	......	......	......	......	......	......	....
Buffalo	......	25	.....	....	......	6,201	......	106	......	......	....
Waterford	3	......	.....	1	......	728	......	104	......	149	2,614
Whitehall	......	......	.....	4	......	7,451	1,801	......	......	......	....
Oswego	......	......	.....	....	......	......	......	......	......	......	....
Geneva	......	......	.....	....	......	......	......	......	......	......	....
Boonville	8	......	.....	57	......	......	......	2	......	46	....
Agent O'Brien	......	......	.....	....	......	......	......	......	......	......	....
Total	287	780	1	162	316	39,710	3,518	1,167	99	83,327	9,824

Total tons east and west cleared on all canals during the season —(Continued).

OFFICES.	MERCHANDISE.							
	Sugar.	Molasses.	Coffee.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	1,375	1,041	23	....	3,882	3,622	123	29,102
West Troy	13,534	2,542	90	120	20,746	2,094	295	101,879
Syracuse	39	2	1	9	92	......	62	41,218
Rochester	......	......	......	....	50	......	246	19,509
Tonawanda	......	......	......	....	......	......	....	....
Buffalo	......	......	......	....	......	......	....	144
Waterford	1,094	772	......	695	426	84	5	47,085
Whitehall	......	......	......	....	56	......	....	467,537
Oswego	......	......	......	....	......	......	1	2,200
Geneva	......	......	......	....	......	......	....	....
Boonville	43	1	......	7	2	......	47	4,964
Agent O'Brien	......	......	......	....	......	......	....	3,233
Total	16,085	4,358	114	831	25,254	5,800	779	716,871

Total tons east and west cleared on all canals during the season — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and superphosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	80,190	5,381	43,520	792	410	....	669	204,318
West Troy	192,267	3,348	193,588	2,616	1,576	698	23,671	622,864
Syracuse	67,803	7	349,618	12,629	215	....	5,170	588,128
Rochester	84,983	....	25,650	514	......	....	9	157,132
Tonawanda	116,983	....	....	....	......	....	1,618	769,437
Buffalo	2,328	....	....	25,871	651	....	1,840	1,194,017
Waterford	56,039	....	130,570	6,898	25	146	1,816	477,096
Whitehall	5,472	....	....	....	......	201,227	2,163	850,897
Oswego	7,147	....	2,862	....	......	....	955	170,396
Geneva	19,816	....	14,759	18,190	......	....	195	63,419
Boonville	3,997	2	1,467	188	107	....	376	113,284
Agent O'Brien	19,200	....	....	....	......	....	....	34,527
Total	656,225	8,738	762,034	67,698	2,984	202,071	38,482	5,245,515

PROPERTY *left at tide-water from the Erie canal during the season.*

OFFICES.	The Forest—Product of Wood.						Agriculture—Product of animals—Hides.
	Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	
Albany	366,187	285	....	....	....	....	....
New York via Albany	129,620	32	517	210	866	250	....
Left at West Troy	7,000	87	1,852	3,151	....	....	13
Left at New York via West Troy	98,924	98	8,275	3,906	....	....	....
Total	601,731	502	10,644	7,267	866	250	13

Property left at tide-water from the Erie canal during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.								
	Flour.	Wheat.	Rye.	Corn.	Barley.	Barley malt.	Oats.	Apples.	Potatoes.
Albany	....	753	1,444	7,789	5,291	189	757	....	....
New York via Albany	11	58,448	2,404	103,170	4,541	3,256	5,665	51	237
Left at West Troy	5	....	482	2,998	791	144	......	....	....
Left at New York via W. Troy.	27	217,233	10,977	357,098	28,030	6,374	19,162	...	300
Total	43	276,434	15,307	471,055	38,653	9,963	25,584	51	537

Property left at tide-water from the Erie canal during the season — (Continued).

OFFICES.	All other agricultural products—flaxseed.	MANUFACTURES.					MERCHANDISE.		
		Oil meal and cake.	Pig iron.	Castings and ironware.	Domestic salt.	Foreign salt.	Sugar.	Molasses.	Iron and steel.
Albany	....	......	......	15	729	......	....	......	....
New York via Albany	7,132	......	......	....	14,131	......	..	......	100
Left at West Troy	713	76	112	....	3,369	5	4	1	330
Left at New York via W. Troy.	19,582	590	5,731	220	25,836	......	....	......	994
Total	27,427	666	5,843	235	44,065	5	4	1	1,424

Property left at tide-water from the Erie canal during the season — (Concluded).

OFFICES.	MERCHANDISE.		OTHER ARTICLES.						Total tons.
	Flint, enamel. crockery and glassware.	All other merchandise.	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	. . . .	237	5,077	23,405	. . . . . .	. . .	. . . . . .	80	412,238
New York, via Albany	. . . .	1,676	749	480	1,487	564	. . . . . .	84	335,681
Left at New York	4	2,862	33,762	54,586	128	12	586	960	114,033
Left at N. Y., via W. Troy. .	. . . .	11,051	5,700	2,849	6,438	246	1,187	348	831,176
Total	4	15,826	45,288	81,320	8,053	822	1,773	1,472	1,693,128

PROPERTY *left at tide-water from the Champlain canal during the season.*

OFFICES.	THE FOREST — PRODUCT OF WOOD.			AGRICULTURE — PRODUCT OF ANIMALS.		AGRICULTURE — VEGETABLE FOOD.				
	Boards and scantling.	Timber.	Wood.	Pork.	Cheese.	Flour.	Wheat.	Rye.	Corn.	Barley.
Albany	73,903	......	482	....	....	....	....	31	......	....
New York via Albany	19,694	......	2,156	....	....	....	....	....	......	....
West Troy	34,322	1,611	7,777	....	1	56	....	216	......	....
New York via West Troy	123,191	1,500	8,456	....	....	7	....	...	......	....
Waterford	68,502	100	5,031	3	....	337	43	....	2,197	348
Total	319,612	3,211	23,902	3	1	400	43	247	2,197	348

Property left at tide-water from the Champlain canal during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.					All other agricultural products — cotton.	MANUFACTURES.		
	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.		Furniture.	Bar and pig lead.	Pig iron.
Albany	......	......	......	....	......	......	......	......	......
New York via Albany	......	......	......	....	159	......	......	......	77
West Troy	......	......	......	60	......	......	......	......	3,759
New York via West Troy	......	......	......	1	480	......	4	......	2,284
Waterford	1,505	406	6	113	3,616	1	......	23	5,026
Total	1,505	406	6	174	4,255	1	4	23	11,146

Property left at tide-water from the Champlain canal during the season — (Continued).

OFFICES.	MANUFACTURES.			MERCHANDISE.					
	Bloom and bar iron.	Castings and ironware	Foreign salt.	Sugar.	Molasses.	Spikes, nails and horseshoes.	Iron and steel.	Railroad iron	All other merchandise.
Albany	......	......	......	....	......	....	......	......	2,357
New York via Albany	......	......	......	...	......	....	......	......	4,635
West Troy	......	15	......	1	......	....	......	......	39,546
New York via West Troy	1,682	......	......	....	......	....	1,096	......	310,849
Waterford	319	977	118	77	8	21	361	2	144,624
Total	2,001	992	118	78	8	21	1,457	2	502,011

Property left at tide-water from the Champlain canal during the season — (Concluded).

OFFICES.	OTHER ARTICLES.						Total tons.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	1,020	....	....	....	....	5	77,798
New York via Albany	164	....	....	....	3,282	....	30,167
West Troy	11,020	4,143	....	....	11,487	923	114,937
New York via West Troy	24,389	699	....	....	156,034	548	631,220
Waterford	8,046	56,783	2,534	124	25,179	1,812	328,242
Total	44,639	61,625	2,534	124	195,982	3,288	1,182,364

PROPERTY *left at tide-water from all the canals during the season.*

OFFICES.	THE FOREST — PRODUCT OF WOOD.						AGRICULTURE — PRODUCT OF ANIMALS.		
	Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	Pork.	Cheese.	Hides.
Albany	675,849	396	517	2,960	866	516	....	......	....
West Troy	280,899	197	25,918	23,448	......	1,192	....	1	13
Waterford	68,502	......	100	5,031	......	......	3	......	....
Total	1,025,250	593	26,535	31,439	866	1,708	3	1	13

Property left at tide-water from all the canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.										
	Flour.	Wheat.	Rye.	Corn.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.
Albany	11	59,201	5,045	110,959	17,258	4,780	6,422	......	......	51	396
West Troy	95	217,927	14,798	360,096	38,814	7,308	19,162	......	717	61	2,307
Waterford	337	43	......	2,197	348	......	1,505	406	6	113	3,616
Total	443	277,171	19,843	473,252	56,420	12,088	27,089	406	723	225	6,319

Property left at tide-water from all the canals during the season — (Continued).

OFFICES.	ALL OTHER AGRICULTURAL PRODUCTS.		MANUFACTURES.							
	Cotton.	Flaxseed.	Oil meal and cakes.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron ware.	Domestic salt.	Foreign salt.
Albany	......	7,132	......	...	......	77	......	15	14,860	....
West Troy	......	20,295	666	4	......	11,886	1,682	235	29,205	5
Waterford	1	......	......	....	23	5,026	319	977	......	118
Total	1	27,427	666	4	23	16,989	2,001	1,227	44,065	123

Property left at tide-water from all the canals during the season—(Continued).

OFFICES.	MERCHANDISE.						
	Sugar.	Molasses.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	......	......	....	100	......	....	11,917
West Troy	5	1	2,420	......	......	4	364,639
Waterford	77	8	21	361	2	....	144,624
Total	82	9	2,441	461	2	4	521,180

Property left at tide-water from all the canals during the season — (Concluded).

OFFICES.	OTHER ARTICLES.						Total tons.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	7,745	23,885	1,487	564	3,282	187	956,478
West Troy	74,871	62,277	6,566	258	169,294	2,779	1,740,045
Waterford	8,046	56,783	2,534	124	25,179	1,812	328,242
Total	90,662	142,945	10,587	946	197,755	4,778	3,024,765

PROPERTY *that went to New York from the Erie canal during the season of* 1890.

OFFICES.	THE FOREST — PRODUCT OF WOOD.						AGRICULTURE — VEGETABLE FOOD.			
	Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	Flour.	Wheat.	Rye.	Corn.
Albany..........	129,620	32	517	210	866	250	11	58,448	2,404	103,170
West Troy.......	98,924	98	8,275	3,906	......	......	27	217,233	10,977	357,098
Total	228,544	130	8,792	4,116	866	250	38	275,681	13,381	460,268

Property that went to New York from the Erie canal during the season of 1890 — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.					All other agricultural products—flax seed.	MANUFACTURES.			
	Barley.	Barley malt.	Oats.	Apples.	Potatoes.		Oil meal and cake.	Pig iron.	Castings and ironware.	Domestic salt.
Albany	4,541	3,256	5,665	51	237	7,132	.....	......	......	14,131
West Troy	28,030	6,374	19,162	....	300	19,582	590	5,731	220	25,836
Total	32,571	9,630	24,827	51	537	26,714	590	5,731	220	39,967

Property that went to New York from the Erie canal during the season of 1890 — (Concluded).

OFFICES.	MERCHANDISE.		OTHER ARTICLES.						Total tons.
	Iron and steel.	All other merchandise.	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	100	1,676	749	480	1,487	564	......	84	335,681
West Troy	994	11,051	5,700	2,849	6,438	246	1,187	348	831,176
Total	1,094	12,727	6,449	3,329	7,925	810	1,187	432	1,166,857

PROPERTY *that went to New York from the Champlain canal during the season of* 1890.

OFFICES.	THE FOREST — PRODUCT OF WOOD.			AGRICULTURE — VEGETABLE FOOD.					MANUFACTURES.		
	Boards and scantling.	Timber.	Wood.	Flour.	Barley.	Peas and beans.	Apples.	Potatoes.	Furniture.	Pig iron.	Bloom and bar iron.
Albany.........	19,694	......	2,156	....	....	......	....	159	......	77	....
West Troy	123,191	1,500	8,456	7	....	......	1	480	4	2,284	1,682
Waterford	63,316	......	1,943	....	348	6	113	3,616	......	3,002	319
Total	206,201	1,500	12,555	7	348	6	114	4,255	4	5,363	2,001

Property that went to New York from the Champlain canal during the season of 1890 — (Concluded).

OFFICES.	MERCHANDISE.		OTHER ARTICLES.				Total tons.
	Iron and steel.	All other merchandise.	Stone, lime and clay.	Anthracite coal.	Iron ore.	Sundries.	
Albany	....	4,635	164	....	3,282	....	30,167
West Troy	1,096	310,849	24,389	699	156,034	548	631,220
Waterford	358	141,425	2,331	....	25,179	114	242,070
Total	1,454	456,909	26,884	699	184,495	662	903,457

VALUE *of all the property left at tide-water during the season.*

OFFICES.	THE FOREST—PRODUCT OF WOOD.						
	Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Ashes, leached.
Albany to New York	$2,709,749	$2,880	$5,984	....	$3,380	$288,625	$3,437
Albany	8,239,217	7,410	......	....	848	....	....
West Troy and New York	5,556,419	5,087	......	$369,843	33,474	....	7,947
Waterford and New York	1,109,457	....	1,350	....	8,156	....	....
Total	$17,614,842	$15,377	$7,334	$369,843	$45,858	$288,625	$11,384

Value of all the property left at tide-water during the season — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.			AGRICULTURE — VEGETABLE FOOD.			
	Pork.	Cheese.	Hides.	Flour.	Wheat.	Rye.	Corn.
Albany to New York	....	......	......	$625	$1,987,240	$80,359	$2,026,559
Albany	....	......	......	....	25,602	33,208	153,005
West Troy and New York	....	$200	$1,313	6,019	7,409,525	332,935	7,073,521
Waterford and New York	$252	......	......	19,481	1,461	....	43,158
Total	$252	$200	$1,313	$26,125	$9,423,828	$446,502	$9,296,243

Value of all the property left at tide-water during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.						
	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.
Albany to New York...........	$309,753	$237,794	$159,354	....	....	$2,380	$8,570
Albany........................	236,792	30,043	21,277	....	....	....	....
West Troy and New York	1,231,695	401,939	538,921	....	$65,730	2,825	49,995
Waterford and New York.......	11,020	....	42,341	$7,312	550	4,809	78,361
Total....................	$1,789,260	$669,776	$761,893	$7,312	$66,280	$10,014	$136,926

Value of all the property left at tide-water during the season — (Continued).

OFFICES.	ALL OTHER AGRICULTURAL PRODUCTS.		MANUFACTURES.			
	Cotton.	Flaxseed.	Oil meal and cake.	Furniture.	Bar and pig lead.	Pig iron.
Albany to New York	......	$392,234	....	....	....	$1,390
Albany	......	....	....	....	....	....
West Troy and New York	......	1,116,251	$14,988	$2,000	....	213,966
Waterford and New York	$1	....	....	....	$225	90,461
Total	$1	$1,508,485	$14,988	$2,000	$225	$305,817

Value of all the property left at tide-water during the season — (Continued).

OFFICES.	MANUFACTURES.				MERCHANDISE.	
	Bloom and bar iron.	Castings and ironware.	Domestic salt.	Foreign salt.	Sugar.	Molasses.
Albany to New York	....	....	$94,208	....	....	....
Albany	....	$600	4,860	....	....	....
West Troy and New York	$50,460	9,399	194,368	$101	$252	$35
Waterford and New York	9,576	39,067	....	2,352	9,204	378
Total	$60,036	$49,066	$293,436	$2,453	$9,456	$413

Value of all the property left at tide-water during the season — (Continued).

OFFICES.	MERCHANDISE.				
	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamal, crockery and glassware.	All other merchandise.
Albany to New York	....	$4,000	....	....	$268,665
Albany	....	....	....	....	88,856
West Troy and New York	....	96,866	....	$2,188	10,939,199
Waterford and New York	$1,068	14,475	$47	....	4,338,735
Total	$1,068	$115,341	$47	$2,188	$15,635,455

Value of all the property left at tide-water during the season — (Concluded).

OFFICES.	OTHER ARTICLES.						Total value.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany to New York...........	$4,122	$2,400	$4,462	$14,512	$32,816	$16,887	$8,662,385
Albany........................	15,242	117,026	....	....	....	20,600	8,994,586
West Troy and New York......	187,178	311,387	19,681	7,898	1,692,928	555,873	3,502,406
Waterford and New York......	20,114	283,913	6,601	2,790	251,794	362,380	6,760,889
Total.........	$226,656	$714,726	$30,744	$25,200	$1,977,538	$955,740	$62,920,266

TOTAL TONS *of property that went to New York from all canals during the season.*

OFFICES.	THE FOREST — PRODUCT OF WOOD.						AGRICULTURE — VEGETABLE FOOD.		
	Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	Flour.	Wheat.	Rye.
Albany..................	167,269	111	517	2,366	866	516	11	58,448	3,571
West Troy..............	232,165	98	21,135	12,362	......	1,192	34	217,927	13,857
Waterford..............	63,316	......	......	1,943	......	......	......	....	....
Total	462,750	209	21,652	16,671	866	1,708	45	276,375	17,428

Total tons of property that went to New York from all canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.							All other agricultural products — flax seed.
	Corn.	Barley.	Barley malt.	Oats.	Peas and beans.	Apples.	Potatoes.	
Albany	103,170	9,781	4,323	5,665	......	51	396	7,132
West Troy	357,098	33,600	7,164	19,162	717	1	2,307	19,582
Waterford	....	348	......	......	6	113	3,616	....
Total	460,268	43,729	11,487	24,827	723	165	6,319	26,714

Total tons of property that went to New York from all canals during the season — (Continued).

OFFICES.	MANUFACTURES.						MERCHANDISE.	
	Oil meal and cake.	Furniture.	Pig iron.	Bloom and bar iron.	Castings and iron ware.	Domestic salt.	Iron and steel.	All other merchandise.
Albany	......	......	77	......	......	14,131	100	8,955
West Troy	590	4	8,015	1,682	220	25,836	2,090	322,231
Waterford	......	......	3,002	319	......	......	358	141,425
Total	590	4	11,094	2,001	220	39,967	2,548	472,611

Total tons of property that went to New York from all canals during the season — (Concluded).

OFFICES.	OTHER ARTICLES.						Total.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	1,648	480	1,487	564	3,282	84	395,001
West Troy	30,089	3,548	6,438	246	157,221	896	1,497,507
Waterford........................	2,331	....	....	....	25,179	114	242,070
Total	34,068	4,028	7,925	810	185,682	1,094	2,134,578

TOTAL TONS *of property carried on the Erie canal during the season.*

OFFICES.	Boats, number of miles cleared.	THE FOREST — PRODUCT OF WOOD.						
		Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Ashes leached.
Albany	402,305	3,198	......	4	......	......	6,586	14
West Troy	964,883	20,942	6	3,932	......	7,575	......	....
Syracuse	246,274	3,325	50	540	223	14,022	......	....
Rochester	73,343	50	......	......	127	2,276	609	....
Tonawanda	758,255	622,618	1,649	25,172	......	1,190	......	....
Buffalo	1,674,846	66,059	462	1,437	5,067	......	......	250
Total	4,113,907	716,192	2,167	31,085	5,417	25,063	7,196	264

Total tons of property carried on the Erie canal during the season — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.						AGRICULTURE — VEGETABLE FOOD.			
	Pork.	Cheese.	Butter.	Lard, tallow and lard oil.	Wool.	Hides.	Flour.	Wheat.	Rye.	Corn.
Albany	......	......	......	......	......	......	......	......	......	....
West Troy	......	......	......	......	......	122	5	......	504	1,714
Syracuse	12	13	1	25	1	......	615	5,422	6	941
Rochester	......	......	......	......	......	......	......	6,486	......	....
Tonawanda	......	......	......	......	......	......	......	......	......	207
Buffalo	......	......	......	......	......	......	195	329,539	16,903	598,434
Total	12	13	1	25	1	122	815	341,447	17,413	601,296

Total tons of property carried on the Erie canal during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.								
	Corn meal.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.
Albany	......	......	......	......	......	523	......	......	128
West Troy	......	......	2,610	......	......	1,354	38	14	414
Syracuse	4	2,654	9,323	109	417	......	13	233	.....
Rochester	......	2,613	859	......	17	......	......	......	.....
Tonawanda	......	......	......	......	......	......	......	......	....
Buffalo	......	58,563	4,152	45,202	210	......	.....	......	.....
Total	4	63,830	16,944	45,311	644	1,877	51	247	542

Total tons of property carried on the Erie canal during the season — (Continued).

OFFICES.	ALL OTHER AGRICULTURAL PRODUCTS.				MANUFACTURES.				
	Cotton.	Hemp.	Clover and grass seed.	Flaxseed.	Domestic spirits.	Oil meal and cake.	Furniture.	Bar and pig lead.	Pig iron.
Albany	......	591	81	244	......	......	9	......	12,619
West Troy	20	798	548	33	257	752	......	293	5,681
Syracuse	......	......	......	......	......	......	33	......	212
Rochester	......	....	......	......	......	......	......	......	....
Tonawanda	......	......	......	......	......	......	......	......	....
Buffalo	......	......	......	30,386	......	25	......	......	6,201
Total	20	1,389	629	30,663	257	777	42	293	24,713

Total tons of property carried on the Erie canal during the season — (Continued).

OFFICES.	MANUFACTURES.					MERCHANDISE.	
	Bloom and bar iron.	Castings and ironware.	Domestic cottons.	Domestic salt.	Foreign salt.	Sugar.	Molasses.
Albany	1,146	200	12	....	890	1,373	1,041
West Troy	347	220	87	457	5,646	12,517	2,495
Syracuse	....	134	......	65,421	......	....	1
Rochester	....	168	......	12,966	......	....	....
Tonawanda	....	....	......	....	......	....	....
Buffalo	....	106	......	....	......	....	....
Total	1,493	828	99	78,844	6,536	13,890	3,537

Total tons of property carried on the Erie canal during the season — (Continued).

OFFICES.	MERCHANDISE.					
	Coffee.	Nails, spikes and horse-shoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glass ware.	All other merchandise.
Albany	23	....	3,876	3,622	123	28,836
West Troy	90	....	19,549	2,092	295	98,852
Syracuse	......	4	84	....	62	28,076
Rochester	......	......	50	....	246	19,509
Tonawanda	......	....	....	....	....	....
Buffalo	......	....	....	....	....	144
Total	113	4	23,559	5,714	726	175,417

Total tons of property carried on the Erie canal during the season — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and superphosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	77,999	5,381	39,143	....	410	......	669	188,741
West Troy	180,884	3,348	76,008	224	1,450	466	21,259	473,898
Syracuse	35,800	7	335,395	12,629	99	......	4,798	520,704
Rochester	84,983	....	25,650	514	......	......	9	157,132
Tonawanda	116,983	....	....	....	......	......	1,618	769,437
Buffalo	2,328	....	....	25,871	651	......	1,840	1,194,017
Total	498,977	8,736	476,196	39,238	2,610	466	30,193	3,303,929

TOTAL TONS *of property carried on the Champlain canal during the season.*

OFFICES.	Boats, number of miles cleared.	THE FOREST—PRODUCT OF WOOD.				AGRICULTURE—PRODUCT OF ANIMALS.		AGRICULTURE—VEGETABLE FOOD.		
		Boards and scantling.	Timber.	Staves.	Wood.	Pork.	Cheese.	Flour.	Wheat.	Rye.
Albany	6,905	2,093	104	......	......	4	......	172	43	119
West Troy	60,808	816	54	......	294	21	......	193	....	.....
Waterford	157,288	193,344	11,287	......	19,853	32	1	113	....	247
Whitehall	317,979	129,382	14,545	587	18,656	......	......	....	....	.....
Oswego	....	....	......	......	......	......	......	....	....	.....
Total	542,980	325,635	25,990	587	38,803	57	1	478	43	366

Total tons of property carried on the Champlain canal during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.							
	Corn.	Barley.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.
Albany	1,860	......	1,504	398	......	......	......	....
West Troy	140	......	166	......	10	......	2	41
Waterford	......	......	113	102	......	126	2,624	....
Whitehall	......	348	......	.....	6	49	1,613	....
Oswego	......	......	......	......	......	......	......	....
Total	2,000	348	1,783	500	16	175	4,239	41

Total tons of property carried on the Champlain canal during the season — (Continued).

OFFICES.	MANUFACTURES.								
	Domestic spirits.	Oil meal and cake.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and iron ware.	Domestic salt.	Foreign salt.
Albany	......	3	......	......	202	......	228	......	269
West Troy	15	......	2	23	6,616	224	......	1,670	405
Waterford	3	......	1	......	728	......	104	149	2,614
Whitehall	......	......	4	......	7,451	1,801	......	......	......
Oswego	......	......	......	......	......	......	......	......	......
Total	18	3	7	23	14,997	2,025	332	1,819	3,288

Total tons of property carried on the Champlain canal during the season — (Continued).

OFFICES.	MERCHANDISE.						
	Sugar.	Molasses.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	....	....	....	6	....	....	154
West Troy	1,017	47	120	1,381	2	....	3,002
Waterford	1,094	772	695	426	84	5	47,085
Whitehall	....	....	....	56	....	... .	467,537
Oswego	....	....	....	....	....	... .	....
Total	2,111	819	815	1,869	86	5	517,778

Total tons of property carried on the Champlain canal during the season — (Concluded).

OFFICES.	OTHER ARTICLES.						Total.
	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	449	2,853	787	......	232	......	11,248
West Troy	9,116	116,602	2,392	126	146	2,264	146,993
Waterford	56,039	130,570	6,898	25	201,227	1,816	477,092
Whitehall	5,472	....	... ...	......	....	2,163	850,897
Oswego	....	....	....	......	....	......	34,527
Total	71,076	250,025	10,077	151	201,605	6,243	1,520,757

TONS *of property left at and between all offices on the canal during the season of* 1890.

OFFICES.	Boats, number of miles cleared.	THE FOREST — PRODUCT OF WOOD.						
		Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Ashes, leached.
Albany	....	675,849	396	517	......	2,960	866	516
West Troy	....	280,899	197	......	25,918	23,448	......	1,192
Syracuse	....	66,988	1,550	1,737	999	23,085	......	....
Rochester	....	3,206	681	3,549	3,255	2,302	381	....
Tonawanda	....	1,014	......	......	......	......	......	....
Buffalo	....	2,197	......	156	......	375	457	....
Waterford	....	68,502	......	100	......	5,031	......	....
Whitehall	....	672	......	......	......	......	......	....
Oswego	....	852	......	......	......	......	......	....
Geneva	....	635	......	3,780	......	......	......	....
Boonville	....	66	......	......	......	......	......	....
Total	....	1,100,880	2,824	9,839	30,172	57,201	1,704	1,708

Tons of property left at and between all offices on the canal during the season of 1890 — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.						AGRICULTURE — VEGETABLE FOOD.			
	Pork.	Bacon.	Cheese.	Butter.	Lard, tallow and lard oil.	Hides.	Flour.	Wheat.	Rye.	Corn.
Albany	....	....	....	....	......	....	11	59,201	5,045	110,959
West Troy	....	....	1	....	......	13	95	217,927	14,798	360,096
Syracuse	12	2	14	1	26	25	2,773	12,141	1,458	117,828
Rochester	....	....	....	....	......	....	......	51,114	......	....
Tonawanda	....	....	....	....	......	....	249	2,299	......	226
Buffalo	....	....	....	....	......	94	......	6	......	207
Waterford	3	....	....	....	......	....	337	43	......	2,197
Whitehall	57	....	....	....	......	....	2	....	......	....
Oswego	....	....	....	....	......	....	16	240	......	930
Geneva	....	....	....	....	......	....	......	....	......	....
Boonville	1	....	....	....	......	....	3	....	......	154
Total	73	2	15	1	26	132	3,486	342,971	21,301	592,597

Tons of property left at and between all offices on the canal during the season of 1890 — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.								
	Corn meal.	Barley.	Barley malt.	Oats.	Bran and shipstuffs.	Peas and beans.	Apples.	Potatoes.	Dried fruit.
Albany	......	17,258	4,780	6,422	......	......	51	396	....
West Troy	......	38,814	7,308	19,162	......	717	61	2,307	....
Syracuse	1,160	6,638	186	18,439	149	......	......	25	1
Rochester	......	5,877	......	......	......	42	......	......	....
Tonawanda	......	24	......	43	......	......	......	......	....
Buffalo	......	......	......	......	......	1,297	......	......	628
Waterford	......	348	.....	1,505	406	6	113	3,616	....
Whitehall	......	......	......	50	......	25	......	......	....
Oswego	......	......	......	......	......	......	......	......	....
Geneva	......	10,333	......	......	......	......	......	......	....
Boonville	......	.....	......	......	5	......	15	......	....
Total	1,160	79,292	12,274	45,621	560	2,087	240	6,344	629

Tons of property left at and between all offices on the canal during the season of 1890 — (Continued).

OFFICES.	ALL OTHER AGRICULTURAL PRODUCTS.				MANUFACTURES.		
	Cotton.	Hemp.	Clover and grass seed.	Flaxseed.	Domestic spirits.	Oil meal and cake,	Leather.
Albany				7,132			
West Troy				20,295		666	
Syracuse	20				4		1
Rochester							
Tonawanda							
Buffalo		1,484	534	1,711	39		
Waterford	1						
Whitehall					14		
Oswego							
Geneva							
Boonville					7		
Total	21	1,484	534	29,138	64	666	1

Tons of property left at and between all offices on the canal during the season of 1890 — (Continued).

OFFICES.	MANUFACTURES.						
	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and ironware.	Domestic salt.	Foreign salt.
Albany	......	....	77	....	15	14,860	....
West Troy	4	....	11,886	1,682	235	29,205	5
Syracuse	81	....	1,364	....	40	28,003	131
Rochester	......	....	232	....	....	34	90
Tonawanda	......	....	....	....	....	....	....
Buffalo	2	1,338	27,143	1,089	184	4,101	6,444
Waterford	......	23	5,026	319	977	....	118
Whitehall	......	....	1,214	....	229	3,749	3,013
Oswego	......	....	....	....	....	424	....
Geneva	......	....	....	....	....	....	....
Boonville	7	....	....	....	....	11	....
Total	94	1,361	46,942	3,090	1,680	80,387	9,801

Tons of property left at and between all offices on the canals during the season of 1890 — (Continued).

OFFICES.	MERCHANDISE.							
	Sugar.	Molasses.	Coffee.	Nails, spikes and horseshoes.	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.
Albany	......	......	......	....	100	......	....	11,917
West Troy	5	1	......	....	2,420	......	4	364,639
Syracuse	316	6	1	5	1,298	42	68	29,342
Rochester	......	......	......	....	220	......	91	19,791
Tonawanda	......	......	......	....	......	......	....	204
Buffalo	13,999	4,135	90	....	7,114	5,806	263	74,122
Waterford	77	8	......	21	361	2	....	144,624
Whitehall	2,019	924	2	959	407	134	....	6,727
Oswego	11	......	......	....	......	......	65	2,822
Geneva	......	......	......	....	......	......	....	....
Boonville	7	.....	......	2	......	......	2	423
Total	16,434	5,074	93	987	11,920	5,984	493	654,611

Tons of property left at and between all offices on the canal during the season of 1890 — (Concluded).

OFFICES.	OTHER ARTICLES.							Total.
	Stone, lime and clay.	Rock and superphosphates.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	7,745	....	23,885	1,487	564	3,282	187	956,479
West Troy	74,871	....	62,277	6,566	258	169,294	2,779	1,740,045
Syracuse	79,348	570	316,866	27,626	725	812	6,503	748,409
Rochester	97,321	1,686	45,882	716	....	....	946	237,416
Tonawanda	3,054	....	752	....	....	....	266	8,131
Buffalo	290,541	17,687	41,266	....	879	....	62,533	567,921
Waterford	8,046	....	56,783	2,534	124	25,179	1,812	328,242
Whitehall	20,314	....	182,969	5,791	28	....	1,285	230,584
Oswego	14,722	....	5,612	5,796	126	....	432	32,048
Geneva	21,567	....	2,102	3,216	....	....	....	41,633
Boonville	232	....	223	92	18	....	....	1,268
Total	617,761	19,943	738,617	53,824	2,722	198,567	76,743	4,892,175

VALUE *of all the property that went to New York from the canals during the season.*

OFFICES.	THE FOREST — PRODUCT OF WOOD.						AGRICULTURE — VEGETABLE FOOD.	
	Boards and scantling.	Shingles.	Timber.	Wood.	Ashes, pot and pearl.	Ashes, leached.	Flour.	Wheat.
Albany	$2,709,749	$2,880	$5,984	$3,380	$288,625	$3,437	$625	$1,987,240
West Troy	1,603,106	2,537	111,667	5,580	....	......	1,700	7,385,920
Waterford	1,025,703	......	....	3,744	....	......	......	....
Total	$5,338,558	$5,417	$117,651	$12,704	$288,625	$3,437	$2,325	$9,373,160

CONNER

Value of all the property that went to New York from the canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.							
	Rye.	Corn.	Barley.	Barley malt.	Oats.	Peas and beans.	Apples.	Potatoes.
Albany	$80,359	$2,026,559	$309,753	$237,794	$159,354	......	$2,380	$8,570
West Troy	246,998	7,014,432	887,608	350,576	538,921	......	......	6,500
Waterford	....	....	11,020	....	....	$550	4,809	78,361
Total	$327,357	$9,040,991	$1,208,381	$588,370	$698,275	$550	$7,189	$93,431

Value of all the property that went to New York from the canals during the season — (Continued).

OFFICES.	All other agricultural products — Flaxseed.	MANUFACTURES.				
		Oil meal and cake.	Pig iron.	Bloom and bar iron.	Castings and ironware.	Domestic salt.
Albany	$392,234	....	$1,390	... .	....	$94,208
West Troy	1,077,045	$13,273	103,162	....	$8,781	172,237
Waterford	....	....	54,028	$9,576	....	....
Total	$1,469,279	$13,273	$158,580	$9,576	$8,781	$266,445

Value of all the property that went to New York from the canals during the season — (Concluded).

OFFICES.	MERCHANDISE.		OTHER ARTICLES.						Total value.
	Iron and steel.	All other merchandise.	Stone, lime and clay.	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	$4,000	$268,665	$4,122	$2,400	$4,462	$14,512	$32,816	$16,887	$8,662,385
West Troy	39,795	331,533	14,250	14,249	19,298	6,323	11,872	69,530	20,036,893
Waterford	14,336	4,242,759	5,827	....	......	....	251,794	22,864	5,722,371
Total	$58,131	$4,842,957	$24,199	$16,649	$23,760	$20,835	$296,482	$109,281	$30,431,649

VALUE *of all the property carried on the canals during the season.*

OFFICES.	THE FOREST — PRODUCT OF WOOD.						
	Boards and scantling.	Shingles.	Timber.	Staves.	Wood.	Ashes, pot and pearl.	Ashes, leached.
Albany	$87,762	....	$12,360	....	....	$598,725	$91
West Troy	353,839	$150	53,811	....	$11,242	....	....
Syracuse	57,452	1,316	7,290	$969	20,032	....	....
Rochester	510	....	....	5,090	3,252	55,350	....
Tonawanda	10,086,380	42,854	339,824	....	1,700	....	....
Buffalo	1,070,168	12,033	19,386	20,269	....	....	1,667
Waterford	3,132,162	....	144,639	....	28,320	....	....
Whitehall	2,095,987	....	196,360	2,348	26,652	....	....
Oswego	1,532,196	8,285	513	2,375	7,428	....	10,221
Geneva	22,491	....	79,380	....	....	....	....
Boonville	1,004,837	153	223,922	....	26,376	....	....
Total	$19,443,784	$64,791	$1,077,485	$31,051	$125,002	$654,075	$11,979

Value of all the property carried on the canals during the season — (Continued).

OFFICES.	AGRICULTURE — PRODUCT OF ANIMALS.						AGRICULTURE — VEGETABLE FOOD.	
	Pork.	Cheese.	Butter.	Lard, tallow and lard oil.	Wool.	Hides.	Flour.	Wheat.
Albany	$350	....	....	....	......	....	$9,950	$1,461
West Troy	1,904	....	....	....	......	$12,747	11,488	....
Syracuse	182	$8,395	$480	$4,080	$84	525	127,406	202,391
Rochester	......	....	....	....	......	....	....	220,528
Tonawanda	......	....	....	....	......	....	....	....
Buffalo	......	....	....	....	......	....	11,281	11,204,054
Waterford	2,800	200	....	....	......	....	6,538	....
Whitehall	......	....	....	....	......	....	....	....
Oswego	......	....	....	....	......	....	31,563	343,790
Geneva	......	....	....	....	......	....	....	43,860
Boonville	3,038	444,716	....	12	......	....	2,069	....
Total	$8,274	$453,311	$480	$4,092	$84	$13,272	$200,295	$12,016,084

Value of all the property carried on the canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.						
	Rye.	Corn.	Corn meal.	Barley.	Barley meal.	Oats.	Bran and shipstuffs.
Albany	$2,678	$36,540	....	....	....	$42,304	$7,170
West Troy	11,340	36,435	....	....	$143,528	4,660	......
Syracuse	126	26,751	$29,535	$84,027	482,587	7,952	16,190
Rochester	....	....	....	82,751	44,489	....	4,124
Tonawanda	....	4,070	....	....	....	....	......
Buffalo	380,359	11,754,969	....	1,854,479	214,932	1,271,292	3,784
Waterford	5,559	....	....	....	....	3,173	1,836
Whitehall	....	....	....	11,020	....	....	......
Oswego	104,295	204,445	....	843,686	79,853	225	1,732
Geneva	....	....	....	22,040	99,941	....	......
Boonville	....	35,737	....	....	....	4,406	1,999
Total	$504,357	$12,098,947	$29,535	$2,898,003	$1,065,330	$1,334,012	$36,835

Value of all the property carried on the canals during the season — (Continued).

OFFICES.	AGRICULTURE — VEGETABLE FOOD.				ALL OTHER AGRICULTURAL PRODUCTS.			
	Peas and beans.	Apples.	Potatoes.	Dried fruit.	Cotton.	Hemp.	Clover and grass seed.	Flaxseed.
Albany	$48,004	....	......	$40,806	......	$85,747	$4,836	$13,429
West Troy	125,056	$1,750	$332	145,361	$8,000	115,661	32,891	1,832
Syracuse	....	630	9,935	....	......	....	....	....
Rochester	....	....	....	....	......	....	....	....
Tonawanda	....	....	......	....	......	....	....	....
Buffalo	....	....	....	....	......	....	....	1,671,210
Waterford	....	5,366	56,836	....	......	....	....	....
Whitehall	550	2,415	34,957	....	......	....	....	....
Oswego	65,731	....	....	....	......	....	....	....
Geneva	....	....	....	....	......	....	....	....
Boonville	19	721	35,045	....	......	....	24	....
Total	$239,600	$10,882	$137,105	$186,167	$8,000	$201,408	$37,751	$1,686,471

Value of all the property carried on the canals during the season — (Continued).

OFFICES.	MANUFACTURES.							
	Domestic spirits.	Oil meal and cake.	Leather.	Furniture.	Bar and pig lead.	Pig iron.	Bloom and bar iron.	Castings and ironware.
Albany	....	$76	......	$8,910	....	$230,777	$34,368	$17,120
West Troy	$81,576	1,693	......	1,000	$31,536	221,361	17,136	8,781
Syracuse	1,200	......	$330	39,650	....	3,807	....	5,560
Rochester	....	......	......	....	....	....	....	6,720
Tonawanda	....	......	......	....	....	....	....	....
Buffalo	....	563	......	....	....	111,615	....	4,240
Waterford	864	......	......	560	....	13,103	....	4,142
Whitehall	....	......	......	2,000	....	134,108	54,030	....
Oswego	....	......	......	....	....	....	....	....
Geneva	....	......	......	....	....	....	....	....
Boonville	2,332	6	......	28,500	....	....	....	92
Total	$85,972	$2,338	$330	$80,620	$31,536	$714,771	$105,534	$46,655

Value of all the property carried on the canals during the season — (Continued).

OFFICES.	MANUFACTURES.			MERCHANDISE.			
	Domestic cottons.	Domestic salt.	Foreign salt.	Sugar.	Molasses.	Coffee.	Nails, spikes and horse-shoes.
Albany	$7,200	....	$23,191	$165,072	$52,056	$9,450	....
West Troy	52,320	$14,182	121,013	1,624,164	127,083	28,097	$6,010
Syracuse	....	453,597	....	4,632	87	231	425
Rochester	....	86,438	....	....	....	....	....
Tonawanda	....	....	....	....	....	....	....
Buffalo	....	....	....	....	....	....	....
Waterford	....	992	52,281	131,202	38,587	....	34,757
Whitehall	....	....	....	....	....	....	....
Oswego	....	....	....	....	....	....	....
Geneva	....	....	....	....	....	....	....
Boonville	....	306	....	5,172	68	....	338
Total	$59,520	$555,515	$196,485	$1,930,242	$217,881	$37,778	$41,530

Value of all the property carried on the canals during tne season — (Continued).

OFFICES.	MERCHANDISE.				OTHER ARTICLES.	
	Iron and steel.	Railroad iron.	Flint, enamel, crockery and glassware.	All other merchandise.	Stone, lime and clay.	Rock and superphosphates.
Albany	$155,246	$108,667	$61,514	$11,640,802	$200,481	$37,671
West Troy	838,220	62,802	147,548	40,751,735	480,667	23,433
Syracuse	3,690	....	31,049	1,236,507	170,756	50
Rochester	2,017	....	123,200	585,274	212,519	....
Tonawanda	....	....	....	....	292,458	....
Buffalo	....	....	....	....	5,820	....
Waterford	17,024	2,520	2,500	1,692,549	144,095	....
Whitehall	2,240	....	....	14,026,105	13,681	....
Oswego	....	....	1,500	65,989	19,118	....
Geneva	....	....	....	....	49,540	....
Boonville	78	....	23,150	148,918	9,993	14
Total	$1,018,515	$173,989	$390,461	$70,147,879	$1,599,128	$61,168

Value of all the property carried on the canals during the season — (Concluded).

OFFICES.	OTHER ARTICLES.					Total value.
	Anthracite coal.	Bituminous coal.	Petroleum.	Iron ore.	Sundries.	
Albany	$217,596	$2,377	$10,539	....	$133,661	$14,108,987
West Troy	967,937	7,850	40,501	$6,977	4,734,124	51,479,773
Syracuse	1,748,084	37,887	5,477	....	1,033,893	5,865,847
Rochester	138,252	1,542	....	....	1,792	1,573,848
Tonawanda	....	....	....	....	323,628	11,090,914
Buffalo	....	77,615	14,648	....	368,080	30,076,784
Waterford	652,852	20,695	563	1,456	363,181	6,417,257
Whitehall	....	....	....	2,012,279	422,600	19,047,332
Oswego	14,310	....	....	....	190,927	3,528,182
Geneva	73,795	54,570	....	....	39,000	484,617
Boonville	7,333	563	2,403	....	75,205	2,087,545
Total	$3,820,159	$203,099	$74,131	$2,020,712	$7,686,091	$145,761,086

Statement of the total quantity (in tons of 2,000 lbs. each) of property cleared at Buffalo during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	66,059	$1,070,168
Shingles	462	12,033
Timber	1,437	19,386
Staves and heading	5,067	20,269
Ashes, leached	250	1,667
Flour	195	11,281
Wheat	329,531	11,204,054
Rye	16,903	380,359
Corn	598,434	11,754,969
Barley	58,563	1,854,479
Barley malt	4,152	214,932
Oats	45,202	1,271,292
Bran and shipstuffs	210	3,784
Flaxseed	30,386	1,671,210
Oil meal and cake	25	563
Pig iron	6,201	111,615
Castings and ironware	106	4,240
All other merchandise	144	4,320
Stone, lime and clay	2,328	5,820
Bituminous coal	25,871	77,615
Petroleum	651	14,648
Sundries	1,840	368,080
Total	1,194,017	$30,076,784

Statement showing the total amount (in tons of 2,000 lbs.) of all articles left at Buffalo during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	2,197	$35,596
Timber	156	2,106
Wood	375	536
Ashes, pot and pearl	457	41,629
Hides	94	9,839
Wheat	6	204
Corn	207	4,070
Peas and beans	1,297	118,875
Dried fruit	628	20,107
Hemp	1,484	215,138
Clover and grass seed	534	32,045
Flaxseed	1,711	94,125
Domestic spirits	39	11,718
Furniture	2	1,000
Bar and pig lead	1,338	133,782
Pig iron	27,143	488,576
Bloom iron	1,089	32,678
Castings and ironware	184	7,346
Domestic salt	4,101	27,341
Foreign salt	6,444	128,881
Sugar	13,999	1,679,224
Molasses	4,135	206,755
Coffee	90	38,002
Iron and steel	7,114	284,572
Railroad iron	5,806	174,176
Flint, crockery and glassware	263	131,743
All other merchandise	74,122	2,223,638
Stone, lime and clay	290,541	726,351
Phosphate	17,687	123,814
Anthracite coal	41,266	206,329
Petroleum	879	19,782
Sundries	62,533	12,506,616
Total	567,916	$19,726,587

Statement showing the total tons (of 2,000 lbs. each) of property cleared on the Oswego canal, and the value of the same.

	Tons.	Value.
Boards and scantling	94,800	$1,565,344
Shingles	326	8,493
Timber	38	513
Staves	613	2,451
Wood	5,220	7,428
Ashes, leached	1,533	10,221
Pork	1	84
Cheese	8	3,320
Lard	1	240
Hides	5	609
Flour	2,132	123,413
Wheat	10,649	361,858
Rye	4,635	104,421
Corn	10,829	212,729
Corn meal	1,156	29,425
Barley	26,639	843,686
Barley malt	1,543	79,853
Oats	182	5,129
Bran and shipstuffs	579	10,432
Peas and beans	717	65,731
Potatoes	225	4,878
Domestic spirits	4	1,205
Leather	1	330
Furniture	46	22,750
Castings and ironware	5	200
Domestic salt	2,618	17,451
Sugar	39	4,632
Molasses	1	25
Coffee	1	231
Nails, spikes, etc	5	268
Iron and steel	8	316
Flint, enamel, crockery, etc	1	1,613
All other merchandise	15,342	460,223
Stone, lime and clay	39,150	100,375
Anthracite coal	5,461	27,305
Petroleum	116	2,993
Sundries	1,327	265,387
Total	225,936	$4,345,554

Statement showing the total quantity (in tons of 2,000 lbs. each) left on the Oswego canal, and the value of the same.

	Tons.	Value.
Boards and scantling	852	$13,797
Flour	16	938
Wheat	240	8,160
Corn	930	18,260
Domestic salt	424	2,827
Sugar	11	1,350
Flint, enamel, etc	65	32,500
All other merchandise	2,822	84,664
Stone, lime and clay	14,722	36,803
Anthracite coal	5,612	28,055
Bituminous coal	5,796	17,389
Petroleum	126	2,813
Sundries	432	8,630
Total	32,048	$256,186

Total tons of property cleared on the Black River canal during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	62,026	$1,004,837
Shingles	6	153
Timber	16,587	223,922
Wood	18,463	26,376
Pork	22	3,038
Cheese	1,112	444,716
Lard	....	12
Flour	36	2,069
Corn	1,819	35,737
Oats	157	4,406
Bran and shipstuffs	111	1,999
Peas and beans	....	19
Apples	15	721
Potatoes	1,617	35,045
Clover and grass seed	....	24
Domestic spirits	8	2,332
Oil meal and cake	....	6
Furniture	57	28,500
Castings and ironware	2	92
Domestic salt	46	306
Sugar	43	5,172
Molasses	1	68
Nails, spikes and horseshoes	7	338
Iron and steel	2	78
Flint, etc	47	23,150
All other merchandise	4,964	148,918
Stone, lime and clay	3,997	9,993
Phosphate	2	14
Anthracite coal	1,467	7,333
Bituminous coal	188	563
Petroleum	107	2,403
Sundries	19,153	75,205
Total	132,061	$2,087,545

Total tons of property left on the Black River canal during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	66	$891
Pork	1	154
Flour	3	188
Corn	154	2,912
Bran and shipstuffs	5	92
Apples	15	721
Domestic spirits	7	2,196
Furniture	7	3,500
Domestic salt	11	71
Sugar	7	898
Molasses	....	15
Nails, spikes and horseshoes	2	93
Flint, enamel, etc	2	750
All other merchandise	423	12,704
Stone, lime and clay	232	581
Anthracite coal	223	1,116
Bituminous coal	92	276
Petroleum	19	405
Total	1,268	$27,563

Total tons of property cleared on the Cayuya and Seneca canal during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	1,250	$22,491
Timber	5,292	79,380
Wheat	1,290	43,860
Barley	696	22,040
Barley malt	1,931	99,941
Stone, lime and clay	19,816	49,540
Anthracite coal	14,759	73,795
Bituminous coal	18,190	54,570
Sundries	195	39,000
Total	63,419	$484,617

Property left at tide-water from the Oswego canal.

	Tons.	Value.
Boards and scantling	56,816	$920,425
Shingles	91	2,350
Wood	158	212
Ashes (leached)	1,458	9,717
Rye	4,290	96,513
Barley	16,956	536,984
Barley malt	1,939	111,430
Peas and beans	717	65,730
All other merchandise	2,208	66,225
Stone, lime and clay	735	1,838
Total	85,368	$1,811,524

Property left at tide-water from the Black River canal.

	Tons.	Value.
Boards and scantling	47,091	$762,862
Timber	12,680	171,180
Wood	112	160
Potatoes	1,527	33,095
All other merchandise	1,135	34,056
Sundries	18	3,600
Total	62,563	$1,004,953

Property left at tide-water from the Cayuga and Seneca canal.

	Tons.	Value.
Wheat	694	$23,605
Barley	463	14,746
Barley malt	186	10,251
Total	1,343	$48,602

Total tons of property cleared at Whitehall during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	129,382	$2,095,987
Timber	14,545	196,360
Staves and headings	587	2,348
Wood	18,656	26,652
Barley	348	11,020
Peas and beans	6	550
Apples	49	2,415
Potatoes	1,613	34,957
Furniture	4	2,000
Pig iron	7,451	134,108
Bloom iron	1,801	54,030
Iron and steel	56	2,240
All other merchandise, ice	467,537	14,026,105
Stone, lime and clay	5,472	13,681
Iron ore	201,227	2,012,279
Sundries	2,163	432,600
Total	850,897	$19,047,332

Total tons of property left at Whitehall during the season, and the value of the same.

	Tons.	Value.
Boards and scantling	672	$11,205
Pork	57	5,012
Flour	2	125
Oats	50	1,418
Peas and beans	25	1,173
Domestic spirits	14	4,200
Pig iron	1,214	21,852
Castings and iron ware	229	9,138
Domestic salt	3,749	24,997
Foreign salt	3,013	60,255
Sugar	2,019	242,319
Molasses	924	46,239
Coffee	2	945
Nails, spikes and horseshoes	959	66,920
Iron and steel	407	16,266
Railroad iron	134	4,032
All other merchandise	6,727	201,816
Stone, lime and clay	20,314	507,850
Anthracite coal	182,969	914,342
Bituminous coal	5,791	17,374
Petroleum	28	720
Sundries	1,285	257,040
Total	230,584	$2,236,393

ANNUAL STATEMENT, *showing the total quantity of shipments of each article first cleared on the canal at, and the total quantity of shipments of each article left from the canal at Whitehall, from the* 1st *of May to the* 30th *of November*, 1890, *going to and coming from Vermont and Canada.*

ARTICLES.	Description.	QUANTITY CLEARED.			
		Coming from Canada.	Coming from New York.	Coming from Vermont.	Total cleared.
THE FOREST.					
Product of wood:					
Boards and scantling	Feet	61,460,143	13,342,300	2,826,700	77,629,143
Timber	Cubic feet	....	727,261	....	727,261
Staves	Pounds	....	1,174,000	....	1,174,000
Wood	Cords	....	6,663	....	6,663
AGRICULTURE.					
Product of animals:					
Pork	Barrels	....	....	....	....
Vegetable food:					
Flour	Barrels	....	....	....	....
Barley	Bushels	14,500	....	....	14,500
Oats	Bushels	....	....	....	....
Peas and beans	Bushels	....	....	200	200
Apples	Barrels	....	190	500	690
Potatoes	Bushels	....	52,980	800	53,780

MANUFACTURES.					
Furniture	Pounds	....	8,000	....	8,000
Pig iron	Pounds	....	14,900,920	....	14,900,920
Bloom and bar iron	Pounds	....	3,602,000	....	3,602,000
Castings and ironware	Pounds	....	....	....	....
Domestic salt	Pounds	....	....	....	....
Foreign salt	Pounds	....	....	....	....
Domestic spirits	Barrels	....	....	....	....
MERCHANDISE.					
Sugar	Pounds	....	....	....	....
Molasses	Pounds	....	....	....	....
Nails, spikes and horseshoes	Pounds	....	....	....	....
Iron and steel	Pounds	....	112,000	....	112,000
Railroad iron	Pounds	....	....	....	....
All other merchandise	Pounds	344,000	934,729,640	....	935,073,640
Coffee	Pounds	....	....	....	....
OTHER ARTICLES.					
Stone, lime and clay	Pounds	....	10,586,600	358,400	10,945,000
Anthracite coal	Pounds	....	....	....	....
Bituminous coal	Pounds	....	....	....	....
Iron ore	Pounds	....	402,455,780	....	402,455,780
Petroleum or earth oil, crude and refined	Barrels	....	....	....	....
Sundries	Pounds	450,800	3,795,200	80,000	4,326,000

Annual statement, showing total quantity of shipments at and from Whitehall, etc.— (Concluded).

ARTICLES.	Description.	QUANTITY LEFT.			
		Going to Canada.	Going to New York.	Going to Vermont.	Total left.
THE FOREST.					
Product of wood:					
Boards and scantling	Feet	...	415,500	...	415,500
Timber	Cub. feet	...	...	...	...
Staves	Pounds	...	...	...	...
Wood	Cords	...	...	...	...
AGRICULTURE.					
Product of animals:					
Pork	Barrels	...	50	308	358
Vegetable food:					
Flour	Barrels	...	20	...	20
Barley	Bushels	...	...	...	...
Oats	Bushels	...	3,150	...	3,150
Peas and beans	Bushels	...	...	335	335
Apples	Barrels	...	...	...	...
Potatoes	Bushels	...	...	...	...
MANUFACTURES.					
Furniture	Pounds	...	...	...	...
Pig iron	Pounds	...	112,000	2,316,000	2,428,000

Bloom and bar iron	Pounds	....	....	....	....
Castings and ironware	Pounds	....	244,900	212,000	456,900
Domestic salt	Pounds	....	288,400	7,210,700	7,499,100
Foreign salt	Pounds	302,400	1,147,700	4,575,400	6,025,500
Domestic spirits	Barrels	....	3,500	....	3,500
MERCHANDISE.					
Sugar	Pounds	2,641,200	15,000	1,382,450	4,038,650
Molasses	Pounds	1,498,100	91,000	260,480	1,849,580
Nails, spikes and horseshoes	Pounds	....	652,000	1,264,800	1,916,800
Iron and steel	Pounds	....	339,100	474,200	813,300
Railroad iron	Pounds	....	....	268,800	268,800
All other merchandise	Pounds	10,247,600	793,200	2,413,600	13,454,400
Coffee	Pounds	....	....	4,500	4,500
OTHER ARTICLES.					
Stone, lime and clay	Pounds	34,056,900	757,400	5,814,300	40,628,600
Anthracite coal	Pounds	132,955,700	100,948,000	132,033,400	365,937,100
Bituminous coal	Pounds	3,884,300	3,285,800	4,412,800	11,582,900
Iron ore	Pounds	....	....	....	....
Petroléum or earth oil, crude and refined	Barrels	25	135	....	160
Sundries	Pounds	887,100	996,500	686,800	2,570,400

I certify the above to be correct.

FRANKLIN FISHER,
Collector of Statistics.

Dated at WHITEHALL, the 7th of *December*, 1890.

OFFICIAL ANNUAL STATEMENT *of lake and canal rates, Buffalo, December* 4, 1890.

DATE.	LUMBER.		WHEAT.		CORN.	
	CANAL RATES PER 1,000 FEET.		LAKE RATES PER BUSHEL.	CANAL RATES PER BUSHEL.	LAKE RATES PER BUSHEL.	CANAL RATES PER BUSHEL.
	From Buffalo to Albany.	From Buffalo to New York.	From Chicago to Buffalo.	From Buffalo to New York.	From Chicago to Buffalo.	From Buffalo to New York.
			Cts.	Cts.	Cts.	Cts.
May 31	$1 75	$2 25	1.69	3.98	1.41	3.59
June 30	1 67	2 18	2.20	3.75	1.91	3.35
July 31	1 50	2 00	2.26	3.63	1.95	3.13
August 31	1 75	2 25	1.50	3.92	1.25	3.43
September 30	1 75	2 25	1.88	3.93	1.62	3.43
October 31	1 68	2 18	1.98	4.02	1.72	3.52
November 30	1 96	2 46	2.16	3.86	1.97	3.30
Average	....	....	1.95	3.87	1.69	3.39

I certify the above statement to be correct.

WM. C. O'NEIL,
Collector of Statistics.

BUFFALO, ERIE CO., N. Y., *December* 4, 1889.

The following statement shows the average lake and canal rates on wheat and corn since 1880.

YEAR.	Freight, Buffalo to New York.			Tolls.			Freight, not including tolls.			Lake freight.		
	c.	m.	fr.	c.	m.	fr.	c.	m.	fr.	c.	m.	fr.
1880.												
Wheat	6	5	0	1	0	3	5	4	7	5	7	0
Corn	6	0	0	0	9	6	5	0	4	5	0	0
1881.												
Wheat	4	8	8	1	0	3	3	8	5	3	4	0
Corn	4	3	7	0	9	6	3	4	1	2	9	2
1882.												
Wheat	5	3	8	1	0	3	4	3	5	2	6	1
Corn	4	8	7	0	9	6	3	9	1	2	2	1
1883.												
Wheat	4	8	8	Free.			....			3	4	7
Corn	4	4	7	Free.			....			3	1	1
1884.												
Wheat	4	2	0	Free.			....			2	0	7
Corn	3	7	6	Free.			....			1	8	4
1885.												
Wheat	3	8	1	Free.			....			3	0	6
Corn	3	4	8	Free.			....			1	7	1
1886.												
Wheat	5	0	3	Free.			....			3	6	1
Corn	4	5	5	Free.			....			3	3	7
1887.												
Wheat	4	4	4	Free.			....			4	0	3
Corn	4	0	4	Free.			....			3	7	7
1888.												
Wheat	3	4	1	Free.			....			2	4	9
Corn	3	0	1	Free.			....			2	3	3
1889.												
Wheat	4	3	7	Free.			....			2	5	3
Corn	3	9	4	Free.			....			2	2	5
1890.												
Wheat	3	8	7	Free.			....			1	9	8
Corn	3	3	9	Free.			....			1	6	9

ANNUAL STATEMENT *of sundry articles going west from the east on the Erie canal at Buffalo, from May* 1 *to November* 30, 1890.

FOR THE STATES NAMED.

	Sugar. pounds.	Molasses, pounds.	Coffee, pounds.	Railroad iron, pounds.	Crockery and glassware, pounds.	Furniture, pounds.	Merchandise, pounds.
Ohio	2,512,831	530,140	....	11,611,747	....	....	11,681,000
Michigan	2,614,000	599,100	....	....	....	....	12,558,375
Illinois	5,646,233	2,440,865	75,360	....	311,172	....	34,153,331
Wisconsin	2,457,100	510,000	....	....	....	....	13,388,141
Indiana	2,408,100	525,000	60,300	....	....	....	13,212,300
Pennsylvania	2,170,000	565,100	....	....	....	....	12,052,600
Kentucky	....	....	....	....	....	....	....
Missouri	....	....	....	....	....	....	....
Minnesota	4,846,600	1,487,200	....	....	....	....	24,815,800
Iowa	1,996,000	467,000	....	....	....	....	11,940,000
Canada	....	....	....	....	....	....	....
New York	3,336,200	1,145,800	45,300	....	215,800	4,000	14,441,000
Total	27,987,064	8,270,205	180,960	11,611,747	526,972	4,000	148,242,547

ANNUAL STATEMENT *of property going east from the west on the Erie canal at Buffalo, from May* 1 *to November* 30, 1890.

FROM THE STATES NAMED.

	Boards and scantling, feet.	Shingles, M.	Wheat, bushels.	Flour, barrels.	Rye, bushels.	Corn, bushels.	Barley, bushels.	Oats, bushels.	Merchandise, pounds.
Ohio	....	......	571,519	....	15,209	1,332,901	10,000	40,000	....
Michigan	30,790,240	3,701¾	805,949	....	12,100	1,353,350	175,000	152,000	....
Illinois	....	......	4,676,659	....	363,835	7,893,659	903,731	1,678.468	....
Wisconsin ...	8,845,614	......	739,400	....	114,600	1,394,900	380,000	629,075	....
Indiana	....	......	816,200	....	45,000	1,480,500	225,000	280,450	....
Pennsylvania.	....	......	....	....	......	....	....	....	....
Kentucky ...	....	......	....	....	......	....	....	....	....
Missouri	....	......	....	....	......	....	....	....	....
Minnesota ...	....	......	2,889,740	....	53,000	5,914,960	20,000	45,100	....
Iowa	....	......	485,000	....	......	2,002,300	50,000	....	....
Canada	....	......	....	....	......	....	676,374	....	....
New York ...	....	......	....	1,805	......	....	....	....	288,000
Total....	39,635,854	3,701¾	10,984,367	1,805	603,744	21,372,670	2,440,105	2,825,093	288,000

I certify the foregoing to be correct.

WM. C. O'NEIL,
Collector of Statistics.

BUFFALO, *December* 4, 1890.

The following table shows the separate tonnage of the New York Central, the Erie Railway and the canals each year since 1853, with the losses or gains of each year compared with the preceding year:

CANALS AND RAILROADS.	1853.	1854.	Gain in 1854.	Loss in 1854.
New York Canals, tons	4,247,853	4,165,862	....	81,991
New York Central Railroad, tons	360,000	549,804	189,804	....
New York and Erie Railroad, tons	631,039	743,250	112,211	....
	5,238,892	5,458,916	302,015	81,991
	1854.	1855.	Gain in 1855.	Loss in 1855.
New York Canals, tons	4,165,862	4,022,617	....	143,245
New York Central Railroad, tons	549,804	670,073	120,269	....
New York and Erie Railroad, tons	743,250	842,048	19,798	....
	5,458,916	5,534,738	219,067	143,245
	1855.	1856.	Gain in 1856.	Loss in 1856.
New York Canals, tons	4,022,617	4,116,084	93,465	....
New York Central Railroad, tons	670,073	776,112	106,039	....
New York and Erie Railroad, tons	842,048	943,215	101,167	....
	5,534,738	5,835,409	300,671	....

	1856.	1857.	Gain in 1857.	Loss in 1857.
New York Canals, tons	4,116,082	3,344,061	....	772,021
New York Central Railroad, tons	776,112	838,791	62,679	....
New York and Erie Railroad, tons	943,215	978,066	34,851	....
	5,835,409	5,160,918	97,530	772,021

	1857.	1858.	Gain in 1858.	Loss in 1858.
New York Canals, tons	3,344,061	3,665,192	321,131	....
New York Central Railroad, tons	838,791	765,407	....	73,284
New York and Erie Railroad, tons	978,066	816,054	....	161,112
	5,160,918	5,247,553	321,131	234,496

	1858.	1859.	Gain in 1859.	Loss in 1859.
New York Canals, tons	3,665,192	3,781,684	116,492	....
New York Central Railroad, tons	765,407	834,319	68,912	....
New York and Erie Railroad, tons	816,954	869,073	53,119	....
	5,247,553	5,485,076	238,523	....

	1859.	1860.	Gain in 1860.	Loss in 1860.
New York Canals, tons	3,781,684	4,650,214	868,530	....
New York Central Railroad, tons	834,319	1,028,183	193,864	....
New York and Erie Railroad, tons	869,073	1,139,554	270,481	....
	5,485,076	6,817,951	1,332,875	....

Showing the separate tonnage of the New York Central, the Erie Railway and the canals each year since 1853—(Continued).

CANALS AND RAILROADS.	1860.	1861.	Gain in 1861.	Loss in 1861.
New York Canals, tons	4,650,214	4,507,635	....	142,579
New York Central Railroad, tons	1,028,183	1,167,302	139,119	....
New York and Erie Railroad, tons	1,139,554	1,253,418	113,864	....
	6,817,951	6,928,355	252,983	142,579
	1861.	1862.	Gain in 1862.	Loss in 1862.
New York Canals, tons	4,507,635	5,598,785	1,091,150	....
New York Central Railroad, tons	1,167,302	1,387,433	220,131	....
Erie Railway, tons	1,253,418	1,632,955	379,537	....
	6,928,355	8,619,173	1,690,818	....
	1862.	1863.	Gain in 1863.	Loss in 1863.
New York Canals, tons	5,598,785	5,557,692	....	41,093
New York Central Railroad, tons	1,387,433	1,449,604	62,171	....
Erie Railway, tons	1,632,955	1,815,096	182,141	....
	8,619,173	8,822,392	244,312	41,093

	1863.	1864.	Gain in 1864.	Loss in 1864.
New York Canals, tons	5,557,692	4,852,941	....	704,751
New York Central Railroad, tons	1,449,604	1,557,148	107,544	....
Erie Railway, tons	1,815,096	2,170,798	355,702	....
	8,822,392	8,580,887	463,246	704,751

	1864.	1865.	Gain in 1865.	Loss in 1865.
New York Canals, tons	4,852,941	4,729,654	....	123,287
New York Central Railroad, tons	1,557,148	1,275,299	....	281,849
Erie Railway, tons	2,170,798	2,234,350	63,552	....
	8,580,887	8,239,303	63,552	405,136

	1865.	1866.	Gain in 1866.	Loss in 1866.
New York Canals, tons	4,729,654	5,775,220	1,045,566	....
New York Central Railroad, tons	1,275,299	1,602,197	326,898	....
Erie Railway, tons	2,234,350	3,242,792	1,008,442	....
	8,239,303	10,620,209	2,380,906	....

	1866.	1867.	Gain in 1867.	Loss in 1867.
New York Canals, tons	5,775,220	5,688,325	....	86,895
New York Central Railroad, tons	1,602,197	1,667,926	65,729	....
Erie Railway, tons	3,242,792	3,484,546	241,754	....
	10,620,209	10,840,797	307,483	86,895

Showing the separate tonnage of the New York Central, the Erie Railway and the canals each year since 1853—(Continued).

CANALS AND RAILROADS.	1867.	1868.	Gain in 1868.	Loss in 1868.
New York Canals, tons	5,688,325	6,442,225	753,900	....
New York Central Railroad, tons	1,667,926	1,846,599	178,673	....
Erie Railway, tons	3,484,546	3,908,243	423,697	....
	10,840,797	12,197,067	1,356,270	....
	1868.	1869.	Gain in 1869.	Loss in 1869.
New York Canals, tons	6,442,225	5,859,080	....	583,145
New York Central Railroad, tons	1,846,599	2,281,885	435,286	....
Erie Railway, tons	3,908,243	4,312,209	403,966	....
	12,197,067	12,453,174	839,252	583,145
	1869.	1870.	Gain in 1870.	Loss in 1870.
New York Canals, tons	5,859,080	6,173,769	314,689	....
New York Central Railroads, tons	2,281,885	4,122,000	1,840,115	....
Erie Railway, tons	4,312,209	4,852,505	540,296	....
	12,453,174	15,148,274	2,695,100	....

	1870.	1871.	Gain in 1871.	Loss in 1871.
New York Canals, tons	6,173,769	6,467,888	294,119	
New York Central Railroad, tons	4,122,000	4,532,056	410,056	
Erie Railway, tons	4,852,505	4,844,208		8,297
	15,148,274	15,844,152	704,175	8,297

	1871.	1872.	Gain in 1872.	Loss in 1872.
New York Canals, tons	6,467,888	6,673,370	205,482	
New York Central Railroad, tons	4,532,056	4,393,965		138,091
Erie Railway, tons	4,844,208	5,564,274	720,066	
	15,844,152	16,631,609	925,548	138,091

	1872.	1873.	Gain in 1873.	Loss in 1873.
New York Canals, tons	6,673,370	6,364,782		308,588
New York Central Railroad, tons	4,393,965	5,522,724	1,128,759	
Erie Railway, tons	5,564,274	6,312,702	748,430	
	16,631,609	18,200,208	1,877,189	308,588

	1873.	1874.	Gain in 1874.	Loss in 1874.
New York Canals, tons	6,364,782	5,804,588		560,194
New York Central Railroad, tons	5,522,724	6,114,678	591,954	
Erie Railway, tons	6,312,702	6,364,276	51,574	
	18,200,208	18,283,542	643,528	560,194

Showing the separate tonnage of the New York Central, the Erie Railway and the canals each year since 1853.—(Continued).

CANALS AND RAILROADS.	1874.	1875.	Gain in 1875.	Loss in 1875.
New York Canals, tons	5,804,588	4,859,858	....	944,730
New York Central Railroad, tons	6,114,678	6,001,954	....	112,724
Erie Railway, tons	6,364,276	6,239,946	....	124,330
	18,283,542	17,101,758	....	1,181,784
	1875.	1876.	Gain in 1876.	Loss in 1876.
New York Canals, tons	4,859,858	4,172,129	....	687,729
New York Central Railroad, tons	6,001,954	6,803,680	801,726	....
Erie Railway, tons	6,239,946	5,972,818	....	267,128
	17,101,758	16,948,627	801,726	954,857
	1876.	1877.	Gain in 1877.	Loss in 1877.
New York Canals, tons	4,172,129	4,955,963	783,834	....
New York Central Railroad, tons	6,803,680	6,351,356	....	452,324
Erie Railway, tons	5,972,818	6,182,451	209,633	....
	16,948,627	17,489,770	993,467	452,324

	1877.	1878.	Gain in 1878.	Loss in 1878.
New York Canals, tons	4,955,963	5,171,320	215,357	....
New York Central Railroad, tons	6,351,356	7,695,413	1,344,057	....
Erie Railway, tons	6,182,451	6,150,568	....	31,883
	17,480,770	19,017,301	1,559,414	31,883

	1878.	1879.	Gain in 1879.	Loss in 1879.
New York Canals, tons	5,171,320	5,362,372	191,052	....
New York Central Railroad, tons	7,695,413	9,015,753	1,320,340	....
Erie Railway, tons	6,150,568	8,212,641	2,062,073	....
	19,017,301	22,590,766	3,573,465	....

	1879.	1880.	Gain in 1880.	Loss in 1880.
New York Canals, tons	5,362,372	6,457,556	1,095,284	....
New York Central Railroad, tons	9,015,753	10,533,038	1,517,285	....
Erie Railway, tons	8,212,641	8,715,892	503,251	....
	22,590,766	25,706,586	3,115,820	....

	1880.	1881.	Gain in 1881.	Loss in 1881.
New York Canals, tons	6,457,656	5,179,192	....	1,278,464
New York Central Railroad, tons	10,533,038	11,591,379	1,058,341	....
Erie Railway, tons	8,715,892	11,086,823	2,370,931	....
	25,706,586	27,857,394	3,429,272	1,278,464

Showing the separate tonnage of the New York Central, the Erie Railway and the canals each year since 1853—(Concluded).

CANAL AND RAILROADS.	1881.	1882.	Gain in 1882.	Loss in 1882.
New York Canals, tons	5,179,192	5,467,423	228,231	....
New York Central Railroad, tons	11,591,379	11,330,393	....	260,986
Erie Railway, tons	11,086,823	11,895,238	808,415	....
	27,857,394	28,693,054	1,096,646	260,986
	1882.	1883.	Gain in 1883.	Loss in 1883.
New York Canals, tons	5,467,423	5,664,056	196,633	....
New York Central Railroad, tons	11,330,393	10,892,440	....	437,953
Erie Railway, tons	11,895,238	13,610,623	1,715,385	....
	1883.	1884.	Gain in 1884.	Loss in 1884.
New York Canals, tons	5,664,056	5,009,488	....	654,568
New York Central Railroad, tons	10,892,440	10,212,418	....	680,022
Erie Railway, tons	*13,610,623	†16,219,598	‡2,608,975	....
	1884.	1885.	Gain in 1885.	Loss in 1885.
New York canals, tons	5,009,488	4,731,784	....	277,704
New York Central Railroad, tons	10,212,418	10,733,499	521,081	....
Erie Railway, tons	11,071,938	10,253,489	....	818,449
New York, Buffalo and West Shore Railroad, tons	839,539	1,825,176	985,637	....

	1885.	1886.	Gain in 1886.	Loss in 1886.
New York canals, tons	4,731,784	5,293,982	562,198	....
New York Central railroad, tons	10,733,499	12,636,435	§1,902,936	....
Erie railway, tons	10,253,489	‖18,668,238	¶8,414,750	....
New York, Buffalo and West Shore railroad, tons	1,825,176	431,409	....	1,393,767
	1886.	1887.	Gain in 1887.	Loss in 1887.
New York canals, tons	5,293,982	5,553,805	259,823	....
New York Central railroad, tons	12,636,485	14,531,726	1,895,291	....
Erie railway, tons	18,668,238	13,949,260	....	4,718,978
	1887.	1888.	Gain in 1888.	Loss in 1888.
New York canals, tons	5,553,805	4,942,948	....	610,857
New York Central railroad, tons	14,531,726	15,162,812	631,086	....
Erie railway, tons	13,949,260	15,174,009	1,224,749	....
	1888.	1889.	Gain in 1889.	Loss in 1889.
New York canals, tons	4,942,948	5,370,369	427,421	....
New York Central railroad, tons	15,162,812	15,011,541	....	151,271
Erie railway, tons	15,174,009	15,084,132	....	89,877
	1889.	1890.	Gain in 1890.	Loss in 1890.
New York canals, tons	5,370,369	5,246,102	....	124,267
New York Central railroad, tons	15,011,541	16,108,441	1,096,900	....
Erie railway, tons	15,084,132	16,269,656	1,185,524	....

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* Of this amount 1,645,133 tons is the tonnage for five months of the N. Y. P. and O. R. R. Co., leased by the Erie.

† Of this amount 5,147,660 tons is the tonnage for twelve months of the N. Y. P. and O. R. R. Co., leased by the Erie.

‡ An apparent gain, deducting the tonnage of the N. Y. P. and O. for seventeen months, the tonnage of the New York, Lake Erie and Western shows a loss in 1884 of 893,552.

‖ Of this amount 5,861,321 tons is the tonnage of the N. Y. P. and O. R. R.

§ Net gain 2,553,429 tons.

¶ An apparent gain, which is caused by the additional tonnage of the N. Y. B. and W. S. R. R.

The whole number of clearances issued during the season of 1890 *was* 43,439, *and were issued at the following offices:*

Albany	4,615
West Troy	8,254
Syracuse	5,530
Rochester	2,878
Tonawanda	3,655
Buffalo	6,429
Waterford	4,523
Whitehall	4,960
Oswego	960
Geneva	619
Boonville	1,016
Total	43,439

The total tons coming to tide-water for each of the fifty-two years and the aggregate value thereof, in market, was as follows:

YEARS.	Tons.	Value
1838	640,481	$23,038,510
1839	602,128	20,163,199
1840	669,012	23,213,573
1841	774,334	27,225,322
1842	666,626	22,751,013
1843	836,861	28,453,408
1844	1,019,094	34,183,167
1845	1,204,943	45,452,321
1846	1,362,319	51,105,256
1847	1,744,283	73,092,414
1848	1,447,905	50,883,907
1849	1,579,946	52,375,521
1850	2,033,863	55,474,637
1851	1,977,151	53,927,508
1852	2,234,822	66,893,102
1853	2,505,797	73,688,044
1854	2,223,743	72,120,681
1855	1,890,593	74,177,937
1856	2,123,469	74,286,735
1857	1,617,187	51,190,018
1858	1,985,142	61,536,061
1859	2,121,672	43,175,312
1860	2,854,877	78,798,617
1861	2,980,144	81,432,759
1862	3,402,709	111,176,568

Total tons coming to tide-water — (Continued).

YEARS.	Tons.	Value.
1863	3,274,727	$123,173,294
1864	2,805,257	145,609,202
1865	2,730,181	113,865,846
1866	3,305,607	131,801,477
1867	3,029,695	120,902,834
1868	3,240,806	136,446,582
1869	3,096,142	144,866,060
1870	3,156,302	105,517,020
1871	3,494,801	106,874,570
1872	3,647,944	107,086,362
1873	3,376,649	97,869,497
1874	3,123,112	107,976,476
1875	2,608,777	89,447,518
1876	2,426,182	73,893,878
1877	2,986,812	76,787,713
1878	3,637,101	78,563,710
1879	3,286,176	96,992,498
1880	4,067,402	143,572,991
1881	3,065,839	68,785,451
1882	3,068,152	74,303,139
1883	2,892,176	66,219,034
1884	2,900,788	66,718,124
1885	2,715,219	55,130,473
1886	3,215,177	67,517,864
1887	3,158,923	71,755,221
1888	2,584,661	58,801,038
1889	2,623,836	62,780,410
1890	3,024,765	62,920,266

The tons of the total movement of articles on all the canals, from 1837 *to* 1890, *both years inclusive, were as follows:*

YEARS.	Products of the forest.	Agriculture.	Manufactures.	Merchandise.	Other articles.	Total.
1837	618,741	208,043	81,735	94,777	168,000	1,171,296
1838	265,089	255,227	101,526	124,290	186,879	1,333,011
1839	667,581	266,052	111,968	132,286	257,826	1,435,713
1840, Genesee Valley canal opened	587,647	393,780	100,367	112,021	222,231	1,416,046
1841	645,548	391,905	127,896	141,054	215,258	1,521,661
1842	504,597	401,276	98,968	101,446	130,644	1,236,931
1843	687,184	455,797	124,277	119,209	126,972	1,513,439
1844	881,774	509,387	144,245	141,930	156,651	1,816,586
1845	916,976	555,160	160,638	151,450	228,543	1,977,565
1846	1,087,714	814,258	149,006	169,799	218,623	2,268,662
1847	1,086,880	1,092,946	176,448	224,890	287,812	2,869,810
1848	1,104,940	913,824	202,781	261,458	331,287	2,796,230
1849	864,373	1,020,259	203,990	255,455	310,088	2,894,732
1850	1,261,991	965,619	200,218	269,370	379,419	3,076,617
1851	1,393,698	1,125,264	222,529	365,404	475,838	3,582,733
1852	1,586,080	1,213,357	207,955	420,295	435,754	3,863,441
1853	1,821,525	1,150,924	230,036	458,327	587,041	4,247,853
1854	1,768,745	992,839	258,021	406,022	740,235	4,165,862
1855	1,534,934	1,047,344	281,873	374,402	784,064	4,022,617
1856	1,478,674	1,192,673	284,901	370,758	789,076	4,116,082
1857	1,364,002	767,370	232,803	222,954	756,932	3,344,061
1858	1,232,968	1,279,891	295,903	188,441	667,989	3,665,192
1859	1,542,035	816,784	299,421	211,182	912,262	3,781,684
1860	1,509,977	1,682,754	268,759	250,360	938,364	4,650,214
1861	1,052,392	2,144,373	280,256	135,096	895,518	4,507,635
1862	1,569,674	2,494,036	364,877	167,927	1,002,271	4,598,785

1863	1,628,688	2,236,075	319,432	172,278	1,201,219	5,557,692
1864	1,478,921	1,572,836	282,354	143,984	1,374,846	4,852,941
1865	1,467,315	1,696,091	281,832	154,968	1,129,448	4,729,654
1866	1,769,994	1,786,060	302,241	179,878	1,737,047	5,775,220
1867	1,744,252	1,438,517	320,844	319,880	1,964,832	5,688,325
1868	1,958,309	1,442,147	373,262	324,064	2,344,443	6,442,225
1869	1,855,930	1,314,071	342,239	268,970	2,077,870	5,850,080
1870	1,916,511	1,309,153	352,497	271,856	3,333,752	6,173,769
1871	1,941,297	1,863,868	336,288	288,428	2,038,007	6,467,888
1872	1,950,798	1,683,962	325,564	298,758	2,414,288	6,673,370
1873	1,582,072	1,750,418	267,820	172,990	2,591,482	6,364,782
1874	1,482,753	1,772,583	246,697	132,181	2,170,374	5,804,588
1875	1,250,546	1,311,613	275,731	110,141	1,911,827	4,859,858
1876	1,175,313	1,067,497	180,201	64,943	1,684,175	4,172,129
1877	1,312,526	1,522,317	184,218	83,010	1,853,892	4,955,963
1878	1,364,120	1,921,236	220,063	138,064	1,527,837	5,171,320
1879	1,368,849	1,850,347	255,303	237,071	1,650,802	5,362,372
1880	1,566,764	2,408,358	278,114	355,165	1,849,255	6,457,656
1881	1,652,543	1,171,400	250,961	325,775	1,778,513	5,179,192
1882	1,771,743	1,173,257	187,535	283,174	2,051,714	5,467,423
1883	1,828,643	1,394,581	242,649	310,844	1,887,339	5,664,056
1884	1,671,706	1,264,237	205,013	300,480	1,568,052	5,009,488
1885	1,595,632	1,108,711	194,714	220,237	1,612,490	4,731,784
1886	1,523,496	1,537,331	165,760	397,249	1,670,146	5,293,982
1887	1,529,809	1,590,509	212,216	378,734	1,842,537	5,553,805
1888	1,389,728	1,177,587	153,905	206,437	2,015,291	4,942,948
1889	1,567,311	1,330,231	161,074	262,818	2,048,935	5,370,369
1890	1,397,862	1,201,916	139,310	769,672	1,737,342	5,246,102

Total tons of each class of articles which came to the Hudson river from Erie and Champlain canals, from 1837 *to* 1890, *both inclusive, were as follows:*

YEARS.	Products of the forest.	Agriculture.	Manufactures.	Merchandise.	Other articles.	Total tons.
1837	385,017	151,469	10,124	394	64,777	611,781
1838	400,877	182,142	8,487	298	48,677	640,481
1839	377,720	163,785	8,565	499	51,559	602,128
1840	321,709	302,356	8,665	104	36,178	669,012
1841	449,095	270,240	17,891	155	36,953	774,334
1842	321,480	293,177	16,015	185	35,769	666,626
1843	416,173	346,140	29,493	201	44,854	836,861
1844	545,202	383,363	39,957	246	62,627	1,031,395
1845	607,930	447,627	49,812	253	99,321	1,204,943
1846	603,010	628,454	46,076	1,797	82,982	1,362,319
1847	666,113	897,717	51,532	4,831	124,090	1,744,283
1848	603,272	685,896	44,867	6,343	107,527	1,447,905
1849	665,547	769,600	44,288	5,873	94,638	1,579,949
1850	947,768	926,048	39,669	7,105	113,273	2,033,863
1851	913,268	891,420	52,302	4,580	115,581	1,977,151
1852	1,064,677	989,268	47,512	10,605	122,760	2,234,822
1853	1,340,261	932,189	52,817	12,633	167,897	2,505,797
1854	1,103,018	846,447	40,082	14,632	219,564	2,223,743
1855	877,805	782,604	44,844	15,559	174,781	1,895,593
1856	858,771	1,023,417	50,454	14,073	176,754	2,123,469
1857	798,986	561,894	55,611	16,987	183,709	1,617,187
1858	817,613	929,789	74,981	15,233	147,526	1,985,142
1859	1,123,607	610,317	63,079	15,804	308,865	2,121,672
1860	1,137,873	1,373,393	66,969	11,235	265,407	2,854,877

1861	690,586	1,934,247	43,074	8,405	303,832	2,980,144
1862	968,062	2,152,159	45,502	5,470	231,516	3,402,709
1863	1,049,559	1,898,253	56,268	5,123	265,524	3,274,727
1864	1,106,148	1,320,562	79,480	3,469	295,598	2,805,257
1865	1,051,616	1,379,331	58,211	4,302	236,721	2,730,181
1866	1,329,884	1,542,035	60,180	6,372	367,136	3,305,607
1867	1,359,287	1,143,712	77,250	5,196	444,250	2,029,695
1868	1,459,353	1,229,554	89,814	5,058	453,370	3,237,149
1869	1,453,419	1,087,105	84,623	4,122	465,873	3,096,142
1870	1,465,517	1,049,586	91,166	12,118	537,915	3,156,302
1871	1,347,979	1,571,754	94,911	7,603	473,554	3,495,801
1872	1,467,865	1,490,248	80,936	7,672	601,223	3,647,944
1873	1,308,471	1,421,469	46,421	12,091	588,197	3,376,649
1874	1,192,681	1,470,872	49,426	12,905	497,228	3,223,112
1875	813,275	1,175,495	70,209	8,341	541,457	2,608,777
1876	890,725	906,483	44,268	4,364	580,342	2,426,182
1877	978,366	1,362,700	53,545	5,341	586,860	2,986,812
1878	1,120,666	1,833,266	56,108	7,367	619,694	3,637,101
1879	1,043,970	1,710,539	46,928	15,299	469,440	3,286,176
1880	1,202,207	2,090,283	39,397	30,264	705,251	4,067,402
1881	1,367,938	1,165,347	53,013	15,466	464,085	3,065,839
1882	1,397,816	1,024,318	61,876	24,154	559,988	3,068,152
1883	1,403,174	1,234,463	47,910	27,798	449,152	3,162,497
1884	1,097,450	1,054,041	56,899	45,538	377,259	2,631,190
1885	1,284,213	949,870	61,912	48,185	371,039	2,715,219
1886	1,202,190	1,400,301	50,704	65,988	495,708	3,215,177
1887	1,206,279	1,412,166	52,566	21,710	466,202	3,158,923
1888	1,074,279	972,746	73,027	20,364	444,245	2,584,661
1880	1,065,747	976,660	75,250	16,428	489,751	2,623,836
1890	1,086,408	901,407	65,098	524,179	447,673	3,024,765

Exports of flour, wheat and corn from New York, Baltimore, Philadelphia, Boston, New Orleans and Montreal, and the percentage of the exports from each port.

	Flour, barrels.	Wheat, bushels.	Corn, bushels.	PERCENTAGE OF TOTAL EXPORTS AT PLACES NAMED.		
				Flour.	Wheat.	Corn.
	1880.	1880.	1880.			
New York	4,215,415	61,909,929	49,875,430	56.2	49.3	43.9
Boston	1,105,473	3,513,817	11,454,256	14.7	02.8	10.0
Philadelphia	288,656	12,342,492	18,172,396	03.8	09.9	16.0
Baltimore	525,985	33,678,376	15,244,895	07.0	26.8	13.4
Montreal	729,007	9,084,266	7,622,161	09.9	07.1	06.8
New Orleans	626,418	5,169,497	11,177,045	08.4	04.1	09.9
Total	7,500,950	125,698,377	113,546,183			
During the year 1880 the canal carried through freight going east	17,166	29,285,366	39,154,785	00.2	23.2	34.4
	1881.	1881.	1881.			
New York	4,507,052	41,788,708	31,614,480	59.9	48.2	42.7
Boston	1,109,583	3,081,232	8,038,627	14.8	03.6	10.8
Philadelphia	190,842	8,860,522	6,799,457	02.5	10.2	09.2
Baltimore	437,701	19,682,935	12,650,303	05.8	22.7	17.2
Montreal	632,821	6,554,622	3,359,084	08.4	07.6	04.5
New Orleans	642,460	6,707,982	11,508,685	08.6	07.7	15.6
Total	7,520,459	86,676,001	73,970,636			

Exports of flour, wheat and corn from New York, etc.—(Continued).

	Flour, barrels.	Wheat, bushels,	Corn, bushels.	PERCENTAGE OF TOTAL EXPORTS AT PLACES NAMED.		
				Flour.	Wheat.	Corn.
	1881.	1881.	1881.			
During the year 1881 the canals carried through freight going east	....	12,146,166	15,056,571	......	14.0	20.3
	1882.	1882.	1882.			
New York	4,619,499	37,020,103	9,012,373	55.5	50.8	50.7
Boston	1,468,146	2,843,058	2,100,503	17.6	04.0	11.8
Philadelphia	246,147	5,759,947	839,024	02.9	07.9	04.8
Baltimore	490,734	17,465,976	1,126,055	05.9	23.8	06.4
Montreal	775,862	6,913,290	672,850	09.3	09.5	0.37
New Orleans	729,749	2,890,698	4,024,325	08.8	04.0	22.6
Total	8,330,137	72,893,072	17,775,130			
During the year 1882 the canals carried through freight going east	....	18,901,666	7,276,607	......	25.9	40.9
	1883.	1883.	1883.			
New York	4,330,146	20,049,200	22,222,754	56.3	43.6	44.5
Boston	1,766,172	694,384	4,634,509	22.9	01.5	09.3
Philadelphia	362,877	4,372,777	5,435,642	4.7	09.5	10 9
Baltimore	441,477	15,245,868	10,012,247	5.7	33.1	20.1

Exports of flour, wheat and corn from New York, etc. — (Continued).

	Flour, barrels.	Wheat, bushels.	Corn, bushels.	PERCENTAGE OF TOTAL EXPORTS AT PLACES NAMED.		
				Flour.	Wheat.	Corn.
	1883.	1883.	1883.			
Montreal	776,242	5,008,167	4,530,731	10.1	10.9	9.1
New Orleans	22,061	651,430	3,061,224	.3	1.4	6.1
Total	7,698,975	46,021,826	49,897,107			
During the year 1883 the canals carried through freight going east	....	16,466,633	16,799,321	......	35.7	33.6
	1884.	1884.	1884.			
New York	3,907,021	28,687,362	11,862,158	51.6	49.4	38.5
Boston	2,173,842	1,692,081	4,247,071	28.7	02.9	13.8
Philadelphia	203,460	5,775,658	1,610,392	02.6	09.9	05.2
Baltimore	444,249	16,524,524	5,651,605	05.9	28.4	18.3
Montreal	844,019	3,967,457	3,316,053	11.2	06.9	10.8
New Orleans	Not reported.	1,405,219	4,089,507	......	02.5	13.4
Total	7,572,591	58,052,301	30,776,786			
During the year 1884 the canals carried through freight going east	213	24,322,200	5,638,357	......	......	......

	1885.	1885.	1885.			
New York	3,763,029	16,286,800	26,259,328	45.7	54.9	43.8
Boston	1,972,326	1,062,293	3,647,244	23.9	3.5	6.1
Philadelphia	695,287	3,369,915	6,028,564	8.4	11.1	10.1
Baltimore	1,093,093	4,575,262	13,752,196	13.3	15.1	22.9
New Orleans	25,158	96,930	7,825,641	0.3	0.3	13.1
Montreal	679,426	4,221,283	2,378,827	8.4	15.1	4.0
Total	8,228,319	29,612,483	59,891,800	100.0	100.0	100.0
During the season of 1885 the canals carried through freight going east	296	16,379,100	10,883,500	......	55.3	......
	1890	1890	1890			
New York	3,417,399	12,549,946	24,550,165	......	......	......
Boston	1,289,297	497,889	4,590,085	......	......	......
Philadelphia	844,480	699,274	16,844,797	......	......	......
Baltimore	2,624,282	4,817,614	18,854,951	......	......	......
Montreal	824,952	2,243,666	4,970,236	......	......	......
Total	9,000,210	20,808,389	69,780,234	......	......	......

NOTE.—The reports for the years 1886, 1887, 1888 and 1889 have not been kept.

RECEIPTS *by all routes at New York, May* 1 *to November* 30, 1890, *and the percentage of the amount carried by each route.*

	Hudson.	Erie.	Pennsylvania.	Delaware, Lackawanna and Western.	West Shore and Buffalo.	Lehigh Valley.	Baltimore and Ohio.
Flour, barrels.....	590,569	868,719	453,954	311,565	292,917	501,076	113,882
Meal, barrels......	3,869	4,028	78,243	....	400	447	24,265
Meal, sacks	38,701	134,206	94,536	10,182	5,517	6,942	1,962
Wheat, bushels ...	145,200	1,441,800	397,200	4,800	476,400	1,025,200	....
Corn, bushels	1,207,700	1,765,400	46,150	52,000	375,050	1,316,250	650
Oats, bushels	4,774,000	4,548,000	557,000	938,000	6,716,000	2,071,000	1,000
Barley, bushels....	125,300	84,750	6,300	41,300	110,600	93,800	....
Rye, bushels......	3,045	155,360	8,450	....	100,100	5,850	1,950
Malt, bushels	1,334,000	726,000	95,000	86,000	230,000	125,000	3,000
Peas, bushels	93,000	28,200	600	103,800	34,200	29,400	....
Total grain....	7,682,245	8,749,510	1,110,700	1,225,900	8,042,350	4,666,500	6,600
Flour, bushels	2,657,560	3,909,235	2,042,793	1,402,042	1,318,126	2,254,842	512,467
Meal, bushels.....	92,878	284,525	502,764	20,364	12,634	15,672	100,984
Grand total...	10,432,683	12,943,269	3,656,257	2,648,306	9,373,110	6,937,014	620,050
Per cent..........	13.43	16.66	4.71	3.41	12.06	8.93	0.79

Receipts by all routes at New York, May 1 to November 30, 1890, etc.— (Concluded).

	Various.	Total rail.	River and coast.	Canal.	Total water.	Total rail and water.
Flour, barrels	56,395	3,189,077	98,483	....	98,483	3,287,560
Meal, barrels	44	111,476	2,636	....	2,636	114,112
Meal, sacks	1,497	193,543	6,912	....	6,912	300,455
Wheat, bushels	5,400	3,496,000	25,700	9,245,100	9,270,800	12,766,800
Corn, bushels	3,900	4,767,100	6,352	16,272,200	16,278,552	21,045,652
Oats, bushels	12,200	19,617,200	7,100	1,556,700	1,563,800	21,181,000
Barley, bushels	700	462,720	39,000	1,628,300	1,667,300	2,130,050
Rye, bushels	2,800	277,555	17,554	627,200	644,754	922,309
Malt, bushels	11,000	2,610,000	117,270	729,500	846,770	3,456,770
Peas, bushels	35,100	324,300	....	23,900	23,909	348,200
Total grain	71,100	31,554,905	212,976	30,082,900	30,295,876	61,850,781
Flour, bushels	253,777	14,350,844	443,173	....	443,173	14,794,017
Meal, bushels	3,170	1,032,990	24,368	....	24,368	1,057,358
Grand total	328,047	46,938,739	680,517	30,082,900	30,763,417	77,702,156
Per cent	0.42	60.41	0.87	38.72	39.59	100.00

RECEIPTS *by all routes at New York, January* 1 *to November* 30, 1890.

	Hudson.	Erie.	Pennsylvania.	Delaware, Lackawanna and Western.	West Shore and Buffalo.	Lehigh Valley.	Baltimore and Ohio.
Flour, barrels.....	1,027,251	1,277,130	736,525	431,009	464,067	688,939	172,203
Meal, barrels	4,604	11,708	119,619	....	400	961	28,725
Meal, sacks.......	47,948	197,476	140,508	13,705	9,170	8,338	4,987
Wheat, bushels ...	210,850	2,041,650	945,500	19,100	631,100	1,463,450	2,300
Corn, bushels.....	2,365,600	4,677,050	573,100	1,266,450	3,938,650	3,732,050	6,050
Oats, bushels	6,362,000	9,098,000	912,000	1,800,000	8,832,000	3,372,000	4,000
Barley, bushels ...	383,150	557,650	115,600	184,150	297,200	441,700	....
Rye, bushels......	42,645	294,560	35,016	19,800	101,300	5,850	1,950
Malt, bushels	2,093,000	991,000	134,000	148,000	345,000	125,000	5,000
Peas, bushels	132,500	135,600	1,150	149,450	64,450	30,600	....
Total grain...	11,589,745	17,795,510	2,716,366	3,586,950	14,209,700	9,170,650	19,300
Flour, bushels	4,622,629	5,747,085	3,314,362	1,939,541	2,088,301	3,100,225	774,914
Meal, bushels.....	114,312	441,784	759,942	27,410	19,940	20,520	124,874
Grand total...	16,326,686	23,984,379	6,790,220	5,553,901	16,317,941	12,291,395	919,088
Per cent	14.21	20.87	5.91	4.83	14.20	10.70	0.80

Receipts by all routes at New York, January 1 *to November* 30, 1890, *etc.*— (Concluded).

	Various.	Total rail.	River and coast.	Canal.	Total water.	Total rail and water.
Flour, barrels	128,861	4,925,985	153,662	....	153,662	5,079,647
Meal, barrels	236	166,253	3,689	....	3,689	169,942
Meal, sacks	2,306	424,438	9,772	....	9,772	434,210
Wheat, bushels	20,375	5,334,325	69,130	9,245,100	9,314,230	14,648,555
Corn, bushels	417,150	16,976,100	70,666	16,272,200	16,342,866	33,318,966
Oats, bushels	114,200	30,494,200	7,100	1,556,700	1,563,800	32,058,000
Barley, bushels	10,450	1,989,900	372,240	1,628,300	2,000,540	3,999,440
Rye, bushels	18,056	519,177	66,716	627,200	693,916	1,213,093
Malt, bushels	14,166	3,855,166	121,272	729,500	850,772	4,705,938
Peas, bushels	41,750	555,500	14	23,900	23,914	579,414
Total grain	636,147	59,724,368	707,138	30,082,900	30,790,038	90,514,406
Flour, bushels	579,875	22,166,932	691,479	....	691,479	22,858,411
Meal, bushels	5,556	1,513,888	34,300	....	34,300	1,548,188
Grand total	1,221,578	83,405,188	1,432,917	30,082,900	31,515,817	114,921,005
Per cent	1.06	72.58	1.24	26.18	27.42	100.00

RECEIPTS *by all routes at New York for the year* 1890.

	Hudson.	Erie.	Pennsylvania.	Delaware, Lackawanna and Western.	West Shore and Buffalo.	Lehigh Valley.	Baltimore and Ohio.
Flour, barrels.....	1,147,598	1,360,494	797,891	473,776	522,156	837,529	193,841
Meal, barrels	4,874	11,833	129,087	....	550	1,068	32,175
Meal, sacks	52,962	207,651	155,212	16,333	9,820	11,826	4,987
Wheat, bushels....	233,050	2,527,050	947,900	19,100	943,100	1,674,050	2,300
Corn, bushels.....	2,793,950	4,705,000	702,450	1,313,900	4,106,350	3,854,900	16,450
Oats, bushels	6,738,000	9,484,000	1,007,000	1,887,000	9,489,000	3,418,000	7,000
Barley, bushels....	479,750	584,250	124,000	305,150	327,300	452,900	....
Rye, bushels......	42,645	308,860	35,016	19,800	101,300	5,850	1,950
Malt, bushels	2,303,000	1,046,000	137,000	153,000	366,000	139,000	5,000
Peas, bushels	142,100	140,400	2,350	156,050	67,450	33,600	....
Total grain ...	12,732,495	18,795,560	2,955,716	3,754,000	15,400,500	9,578,300	32,700
Flour, bushels	5,164,190	6,122,223	3,590,509	2,131,993	2,349,701	3,768,880	872,285
Meal, bushels	125,420	462,634	826,772	32,666	21,840	27,924	138,674
Grand total...	18,022,105	25,380,417	7,372,997	5,918,659	17,772,041	13,375,104	1,043,659
Per cent..........	14.77	20.80	6.04	4.85	14.57	10.96	0.86

RECEIPTS *by all routes at New York for the year* 1890 — (Concluded).

	Various.	Total rail.	River and coast.	Canal.	Total water.	Total rail and water.
Flour, barrels	142,053	5,475,338	160,046	....	160,046	5,635,384
Meal, barrels	246	179,833	4,120	....	4,120	183,953
Meal, sacks	2,358	461,149	13,212	....	13,212	494,361
Wheat, bushels	20,375	6,366,925	151,332	9,276,600	9,427,932	15,794,857
Corn, bushels	420,400	17,913,400	75,866	16,272,200	16,348,066	34,261,466
Oats, bushels	150,200	32,180,200	7,100	1,556,700	1,563,800	33,744,000
Barley, bushels	10,450	2,183,800	424,140	1,687,700	2,111,840	4,295,640
Rye, bushels	19,056	534,477	66,716	627,200	693,916	1,228,393
Malt, bushels	15,166	4,164,166	121,272	741,100	762,372	5,026,538
Peas, bushels	53,150	595,100	14	23,900	23,914	619,014
Total grain	688,797	63,938,068	846,440	30,185,400	31,031,840	94,969,908
Flour, bushels	639,239	24,639,020	720,207	....	720,207	25,359,227
Meal, barrels	5,700	1,641,630	42,904	....	42,904	1,684,534
Grand total	1,333,736	90,218,718	1,609,551	30,185,400	31,794,951	122,013,669
Per cent	1.09	73.94	1.32	24.74	26.06	100

RECEIPTS *by all routes at New York, May* 1 *to December* 1, 1889.

	Hudson.	Erie.	Pennsylvania.	Delaware, Lackawanna and Western.	West Shore and Buffalo.	Lehigh Valley.	Baltimore and Ohio.
Flour, barrels	904,275	820,261	504,505	414,639	339,245	302,499	115,099
Meal, barrels	5,890	9,945	75,635	....	195	120	10,000
Meal, sacks.......	25,496	79,997	103,149	9,300	9,341	4,403	5,014
Wheat, bushels ...	211,750	739,200	174,900	9,900	517,500	92,400	1,650
Corn, bushels.....	539,400	1,625,200	175,200	240,800	2,650,600	2,179,800	600
Oats, bushels	3,867,000	3,557,000	666,000	565,000	4,650,000	1,069,000	2,000
Barley, bushels ...	139,100	102,050	21,450	13,000	118,950	87,100	....
Rye, bushels......	64,800	79,800	9,436	600	35,000	97,800	....
Malt, bushels	1,353,000	651,000	30,000	55,000	114,000	5,000	....
Peas, bushels	62,700	35,750	1,650	64,900	15,400	1,360	....
Total grain...	6,237,750	6,790,000	1,078,636	939,200	8,101,450	3,532,410	4,250
Flour, bushels	4,069,237	3,691,174	2,270,272	1,865,875	1,526,603	1,361,246	517,946
Meal, bushels	74,552	199,774	508,838	18,600	19,462	9,286	50,028
Grand total...	10,381,539	10,680,948	3,857,746	2,823,675	9,647,515	4,902,992	572,224
Per cent	13.33	13.71	4.95	3.62	12.38	6.29	0.73

RECEIPTS *by all routes at New York, May* 1 *to December* 1, 1889 — (Concluded).

	Various.	Total rail.	River and coast.	Canal.	Total water.	Total rail and water.
Flour, barrels	37,637	3,438,160	168,684	290	168,974	3,607,134
Meal, barrels	123	101,908	2,138	....	2,138	104,046
Meal, sacks	2,031	238,731	10,266	....	10,266	148,997
Wheat, bushels	1,100	1,748,400	1,512	12,899,500	12,901,012	14,649 412
Corn, bushels	34,100	7.435,700	113,244	15,734,000	15,847,244	23,282,944
Oats, bushels	8,200	14,384,200	150	2,092,800	2,092,950	16,477,150
Barley, bushels	20,150	501,800	206,050	1,440,800	1,646,850	2,148,650
Rye, bushels	2,796	290,232	48,964	812,690	861,654	1,151,886
Malt, bushels	7,000	2,215,000	43,052	557,800	600,852	2,815,852
Peas, bushels	550	182,310	....	67,800	67,800	250,110
Total grain	73,896	26,757,642	412,972	33,605,390	34,018,362	60,776,004
Flour, bushels	169,367	15,471,720	759,078	1,305	760,383	15,232,109
Meal, bushels	4,554	885,094	29,084	....	29,084	914,178
Grand total	247,817	43,114,456	1,201,134	33,606,695	34,807,829	77,922,285
Per cent	0.32	55.33	1.54	43.13	44.67	100

STATEMENT *showing the quantities and values of exports of domestic breadstuffs, by customs districts, during the year ending January* 30, 1890.

CUSTOMS DISTRICTS.	BARLEY.		BREAD AND BISCUIT.	
	Bushels.	Dollars.	Pounds.	Dollars.
Baltimore, Md	17,868	9,295	31,814	1,458
Bangor, Me	....	....	96	6
Belfast, Me	....	....	....	....
Boston and Charlestown, Mass	10,219	6,109	466,354	16,427
Brazos de Santiago, Tex	....	....	....	....
Brunswick, Ga	....	....	....	....
Buffalo Creek, N. Y	....	....	....	....
Cape Vincent, N. Y	....	....	840	59
Champlain, N. Y	....	....	....	....
Chicago, Ill	....	....	....	....
Corpus Christe, Tex	....	....	7,156	470
Detroit, Mich	....	....	257,661	15,195
Duluth, Minn	....	....	....	....
Galveston, Tex	....	....	17,750	1,431
Genesee, N. Y	1,119	560	....	....
Huron, Mich	....	....	....	....
Key West, Fla	....	....	980	69
Machias, Me	....	....	....	....
Miami, Ohio	....	....	....	....
Minnesota, Minn	9,092	2,962	....	....
Mobile, Ala	....	....	8,385	413
New Bedford, Mass	....	....	13,927	568

New Haven, Conn			1,400	34
New London, Conn			11,000	440
New Orleans, La	24	9	142,554	7,176
Newport News, Va				
New York, N. Y	267,043	131,104	11,730,435	596,303
Niagara, N. Y				
Norfolk and Portsmouth, Va				
Oswegatchie, N. Y				
Oswego, N. Y				
Pamlico, N. C			2,500	150
Passamaquoddy, Me				
Philadelphia, Pa			6,871	888
Portland and Falmouth, Me	54,555	21,831	10,370	1,039
Puget Sound, Oregon	60	48	215,568	10,287
Richmond, Va			320	19
St. John's, Fla			523	29
Saluria, Tex			825	49
San Diego, Cal			3,709	256
Sandusky, Ohio	3,004	1,360		
San Francisco, Cal	1,044,755	581,107	1,966,436	109,190
Savannah, Ga			862	65
Superior, Mich				
Vermont, Vt				
Willamette, Oregon			137,204	4,455
Willmington, Cal	572	220		
Wilmington, N. C				
Oregon, Ore				
All other				
Total	1,408,311	754,605	15,035,540	766,476

Statement showing the quantities and values of exports of domestic breadstuffs, etc. — (Continued).

CUSTOMS DISTRICTS.	CORN.		CORN MEAL.		OATS.	
	Bushels.	Dollars.	Barrels.	Dollars.	Bushels.	Dollars.
Baltimore, Md	23,089,139	581,081	12,738	43,145	748,960	231,902
Bangor, Me	....	....	....	....	15	7
Belfast, Me	15	16	....	....	....	....
Boston and Charlestown, Mass	6,197,554	2,809,121	144,055	321,852	537,122	178,776
Brazos de Santiago, Tex	37,494	30,066	3	12	155	86
Brunswick, Ga	23	15	150	318	19	8
Buffalo Creek, N. Y	50	23	....	....	....	....
Cape Vincent, N. Y	....	....	....	....	....	....
Champlain, N. Y	....	....	....	....	....	....
Chicago, Ill	4,862,785	1,756,642	1,925	4,063	295,485	83,537
Corpus Christie, Tex	51,100	26,754	818	2,380	5,020	2,384
Detroit, Mich	969,301	331,273	27,748	55,498	223,131	62,532
Duluth, Minn	40,000	14,400	1	3	....	....
Galveston, Tex	35,503	12,083	....	....	600	190
Genesee, N. Y	....	....	....	....	....	....
Huron, Mich	630,616	227,836	14,537	41,001	159,000	43,702
Key West, Fla	348,252	146,134	206	472	46,243	15,121
Machias, Me	....	....	6	10	....	....
Miami, Ohio	2,528,342	908,027	....	....	20,050	5,015
Minnesota, Minn	70,869	20,506	2,412	3,219	341,965	94,067
Mobile, Ala	11,739	3,506	28	68	22	12
New Bedford, Mass	1,640	712	....	....	580	225
New Haven, Conn	....	....	1,745	5,118	....	....

New London, Conn						
New Orleans, La	14,990,418	6,608,876	269	841	26,303	8,633
Newport News, Va	1,240,577	527,092			773,155	264,822
New York, N. Y	28,872,330	12,460,492	150,760	407,752	10,286,646	3,431,262
Niagara, N. Y						
Norfolk and Portsmouth, Va	31,728	14,620				
Oswegatchie, N. Y	351,447	150,078	48	111	22,455	6,736
Oswego, N. Y						
Pamlico, N. C	56	32				
Passamaquoddy, Me			2	9		
Philadelphia, Pa	17,086,732	6,799,944	2,846	8,291	10,903	3,938
Portland and Falmouth, Me	279,691	97,942	401	925		
Puget Sound, Oregon	448	163	189	657	631	315
Richmond, Va						
St. John's, Fla	2	1				
Saluria, Tex	3,124	1,256	187	420	652	265
San Diego, Cal	548	340	25	109	334	158
Sandusky, Ohio					300	96
San Francisco, Cal	83,984	54,739			167,630	68,435
Savannah, Ga	63	39	1	3		
Superior, Mich	158,147	74,206	135	565	20,902	5,973
Vermont, Vt						
Willamette, Oregon						
Willmington, Cal					4,498	1,858
Wilmington, N. C			13	37		
Oregon, Ore						
All other						
Total	101,973,717	42,658,015	361,248	896,879	13,692,776	4,510,055

Statement showing the quantities and values of exports of domestic breadstuffs, etc. — (Continued).

CUSTOMS DISTRICTS.	OATMEAL.		RYE.		RYE FLOUR.	
	Pounds.	Dollars.	Bushels.	Dollars.	Barrels.	Dollars.
Baltimore, Md	5,333,066	155,742	41,900	24,587	143	560
Bangor, Me	...	...	...	...	...	...
Belfast, Me	...	...	...	...	...	...
Boston and Charleston, Mass	13,603,410	478,232	...	...	75	260
Brazos de Santiago, Tex	50	5	...	...	...	...
Brunswick, Ga	...	...	...	...	...	...
Buffalo Creek, N. Y	...	...	...	...	...	...
Cape Vincent, N. Y	...	...	...	...	...	...
Champlain, N. Y	...	...	...	...	...	...
Chicago, Ill	...	...	108,493	49,182	...	...
Corpus Christi, Tex	1,120	64	...	...	...	...
Detroit, Mich	...	...	...	...	...	...
Duluth, Minn	...	...	...	...	1	5
Galveston, Tex	...	...	...	...	...	...
Genesee, N. Y	...	...	...	...	...	...
Huron, Mich	516,120	14,163	...	...	...	...
Key West, Fla	...	...	...	...	...	...
Machias, Me	...	...	...	...	...	...
Miami, Ohio	...	...	...	...	...	...
Minnesota, Minn	...	...	6	3	16	38
Mobile, Ala	...	...	...	...	...	...
New Bedford, Mass	...	...	...	...	...	...
New Haven, Conn	...	...	...	...	...	...
New London, Conn	...	...	...	...	...	...
New Orleans, La	2,686	133	174,411	89,076	...	...

Newport News, Va.	723,810	14,476				
New York, N. Y.	3,605,178	74,626	1,852,723	1,074,950	3,698	12,919
Niagara, N. Y.						
Norfolk and Portsmouth, Va.						
Oswegatchie, N. Y.						
Oswego, N. Y.						
Pamlico, N. C.						
Passamaquoddy, Me.	600	30				
Philadelphia, Pa.	644,060	19,511	21,371	11,754		
Portland and Falmouth, Me.	901,280	23,849				
Puget Sound, Oregon	9,530	307	15	11		
Richmond, Va.						
St. John's, Fla.						
Saluria, Tex.	3,681	121				
San Diego, Cal.	11,591	467				
Sandusky, Ohio						
San Francisco, Cal.	102,300	3,117	58,458	30,251		
Savannah, Ga.						
Superior, Mich.	400	5				
Vermont, Vt.						
Willamette, Ore.						
Wilmington, Cal.	2,040	31				
Wilmington, N. C.						
Oregon, Ore.						
All other						
Total.	25,460,322	784,879	2,257,377	1,279,814	3,933	13,782

Statement showing the quantities and values of exports of domestic breadstuffs, etc.—(Concluded).

CUSTOMS DISTRICTS.	WHEAT.		WHEAT FLOUR.		ALL OTHER BREADSTUFFS.
	Bushels.	Dollars.	Barrels.	Dollars.	Dollars.
Baltimore, Md	6,363,376	5,394,465	3,001,225	15,562,609	19,142
Bangor, Me	....	....	....	....	....
Belfast, Me	....	....	....	....	....
Boston and Charleston, Mass	816,300	703,558	1,229,373	6,293,273	34,719
Brazos de Santiago, Tex	....	....	7,800	50,972	6,724
Brunswick, Ga	....	....	490	1,973	344
Buffalo Creek, N. Y	....	....	....	....	1,620
Cape Vincent, N. Y	....	....	1	4	....
Champlain, N. Y	....	....	12	57	23,395
Chicago, Ill	392,771	335,618	16,213	59,112	3,614
Corpus Christi, Tex	....	....	5,496	26,565	3,982
Detroit, Mich	297,173	256,213	165,149	661,249	....
Duluth, Minn	899,016	744,382	178,419	856,276	956
Galveston, Tex	....	....	6,111	23,928	....
Genesee, N. Y	....	....	....	....	....
Huron, Mich	7,100	6,272	113,049	517,092	21,250
Key West, Fla	....	....	49,681	194,928	5,156
Machias, Me	....	....	....	....	....
Miami, Ohio	357,251	277,585	....	....	....
Minnesota, Minn	2,520	2,418	2,067	8,069	42,746
Mobile, Ala	....	....	3,405	15,098	119
New Bedford, Mass	....	....	746	3,586	28
New Haven, Conn	....	....	1,545	5,960	....
New London, Conn	....	....	16	80	....

New Orleans, La.	2,433,529	2,097,640	44,219	200,568	5,710
Newport News, Va.	135,451	117,710	277,220	1,468,136	470
New York, N. Y.	13,438,210	12,273,458	4,228,255	18,759,353	514,622
Niagara, N. Y.	....	....	....	....	....
Norfolk and Portsmouth, Va.	2,982	3,000	3,949	17,755	....
Oswegatchie, N. Y.	....	....	615	2,474	1,155
Oswego, N. Y.	38	38	....	....	....
Pamlico, N. C.	....	....	40	200	....
Passamaquoddy, Me.	....	....	537	2,497	1,162
Philadelphia, Pa.	1,470,242	1,244,903	876,682	3,808,779	503
Portland and Falmouth, Me.	....	....	60,698	360,991	475
Puget Sound, Oregon	1,735,931	1,321,354	38,167	136,864	7,261
Richmond, Va.	....	....	76,332	370,484	152
St. John's, Fla.	....	....	197	784	135
Saluria, Tex.	....	....	522	4,065	835
San Diego, Cal.	885	820	247	1,158	1,763
Sandusky, Ohio	....	....	....	....	....
San Francisco, Cal.	22,824,416	18,022,425	1,139,863	4,692,283	223,464
Savannah, Ga.	....	....	621	3,073	....
Superior, Mich.	269,900	238,460	273,616	1,357,109	1,731
Vermont, Vt.	....	....	....	....	11,885
Willamette, Oregon	2,435,298	1,853,916	387,930	1,407,974	14,144
Willmington, Cal.	....	....	....	....	....
Wilmington, N. C.	....	....	7	33	24
Oregon, Ore.	460,378	345,221	38,866	148,522	....
All other	45,000	36,450	2,330	11,235	62
Total	54,387,767	45,275,906	12,231,711	57,036,168	949,348

TREASURY DEPARTMENT, BUREAU OF STATISTICS, *January* 13, 1891.

S. G. BROCK,
Chief of Bureau.

EXPORTS *of flour and grain from the undermentioned Atlantic seaports during* 1890.

ARTICLES.	From New York.	From Boston.	From Philadelphia.	From Baltimore.	From Montreal.
Flour, barrels	3,417,399	1,289,297	844,480	2,624,282	824,752
Corn meal, barrels	136,432	129,424	4,863	12,230	11,203
Oat meal, barrels	*	*	*	*	15,784
Wheat, bushels	12,549,946	487,889	699,274	4,817,614	2,243,666
Corn, bushels	24,550,165	4,590,085	16,814,795	18,854,951	4,970,236
Oats, bushels	9,301,046	515,878	12,587	617,053	298,245
Barley, bushels	275,313	10,219	....	17,847	10,367
Rye, bushels	1,351,726	....	....	41,900	242,654
Peas, bushels	371,814	232,362	....	....	1,458,191
Total grain, bushels	48,400,010	5,846,433	17,526,656	24,349,365	9,223,359
Flour, total bushels	15,378,296	5,801,836	3,800,160	11,809,269	3,711,384
Meal, total bushels	545,728	517,696	19,452	48,920	234,220
Grand total, bushels	64,324,034	12,165,965	21,346,268	36,207,554	13,168,963

* Not included in this table, January 14, 1891.

EXPORTS *of cereals, etc., from United States Atlantic ports, from January* 1 *to November* 30, 1890.

	From New York.	From Boston.	From Philadelphia.	From Baltimore.
Flour, barrels	3,040,029	1,191,404	690,539	2,501,879
Corn meal, barrels	125,477	101,930	1,000	8,854
Wheat, bushels	11,430,520	512,365	617,876	4,655,018
Corn, bushels	23,787,470	4,627,804	16,658,178	19,205,535
Oats, bushels	9,287,021	468,796	5,100	606,967
Barley, bushels	275,187	....	....	17,847
Rye, bushels	1,321,864	128,603	....	37,859
Peas, bushels	316,737	221,571	....	....
Total grain, bushels	46,418,799	5,959,139	17,281,154	24,523,226
Flour, total bushels	13,680,130	5,361,318	3,107,425	11,258,456
Meal, total bushels	501,908	407,720	4,000	35,416
Grand total, bushels	60,600,837	11,728,177	20,392,579	35,817,098

EXPORTS *of cereals, etc., from United States Atlantic ports, from May* 1 *to November* 30, 1890.

	From New York.	From Boston.	From Philadelphia.	From Baltimore.
Flour, barrels	1,591,956	702,250	377,075	1,294,833
Corn meal, barrels	75,870	68,778	....	2,670
Wheat, bushels	7,076,739	213,956	276,739	2,881,438
Corn, bushels	12,835,629	2,183,950	4,718,682	4,965,408
Oats, bushels	4,020,011	331,960	....	140,549
Barley, bushels	356	....	....	....
Rye, bushels	790,066	12,665	....	11,791
Peas, bushels	115,597	902	....	....
Total grain, bushels	24,838,398	2,743,433	4,995,421	7,999,186
Flour, total bushels	7,163,802	3,160,125	1,696,837	5,826 748
Meal, total bushels	303,480	275,112	....	10,680
Grand total, bushels	32,305,680	6,178,670	6,692,258	13,836,614

STATEMENT *showing the various tonnage of the boats registered in each of the last forty-six years, and the progressive increase of their capacity.*

TONNAGE.	Inventory of all boats to Jan'y, 1884.	New Boats Registered.									
		1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
280	....	....	....	....	....	....	....	....	....	....	....
250	....	....	....	....	....	....	....	....	....	....	3
240	....	....	....	....	....	....	....	....	....	....	1
230	....	....	....	....	....	....	....	....	....	....	....
225	....	....	....	....	....	....	....	....	....	....	....
220	....	....	....	....	....	....	....	....	....	....	1
200	....	....	....	....	....	....	....	....	....	....	5
190	....	....	....	....	....	....	....	....	....	....	....
180	....	....	....	....	....	....	....	....	....	....	....
170	....	....	....	....	....	....	....	....	1	....	....
160	....	....	....	....	....	....	....	....	....	....	....
150	....	....	....	....	....	....	....	2	....	1	6
140	...	....	....	....	....	....	...	....	....	....	....
135	....	....	....	....	....	....	....	....	....	....	....
130	....	....	....	....	....	....	1	....	1	2	7
125	....	....	....	....	....	....	....	....	1	....	18
120	....	....	....	....	....	....	1	....	2	....	16
115	....	....	....	....	....	....	....	....	....	....	10
110	....	....	....	....	....	....	....	....	....	....	16
105	....	....	....	....	....	....	....	....	....	....	....
100	....	....	....	....	....	....	2	13	27	34	79

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Continued).

TONNAGE.	Inventory of all boats to Jan'y, 1884.	NEW BOATS REGISTERED.									
		1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
95	....	....	1	1	6	....	4	6	23	63	180
90	2	1	4	6	27	10	4	25	72	99	164
85	1	....	1	1	45	21	13	16	11	22	22
80	3	9	13	100	560	143	78	38	28	26	33
75	14	33	60	186	553	158	75	17	22	10	15
70	175	124	107	123	162	59	20	20	18	9	6
65	295	94	54	26	44	13	2	4	1	4	3
60	526	71	33	9	30	25	7	3	2	2	2
55	256	15	4	1	13	8	....	...	....	....	.....
50	457	14	5	3	4	2	2	4	1	6	3
45	158	1	2	1	3	4	....	....	1	....	.....
40	148	....	....	3	4	1	....	3	1	....	.....
35	33	1	1	....	3	....	....	....	1	....	.....
30	34	11	1	2	3	6	4	....	....	....	....
25	10	3	....	4	3	....	....	....	....	....	.....
20	8	....	3	3	2	....	2	....	....	....	.....
15	3	1	....	....	1	1	....	....	....	....	.....
10	4	....	1	2	3	1	...	....	....	2	.....
5	....	....	4	....	....	....	....	1	....	....	.....
2	....	....	3	....	....	....	....	....	....	....	.....
	2,126	378	297	477	1,466	457	215	152	213	271	590

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Continued).

TONNAGE.	NEW BOATS REGISTERED.									
	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.
280	....	....	....	....	....	....	....	....	2	.....
250	1	....	1	1	1	2	2	16	3	.....
240	....	1	2	....	....	....	....	7	1	.....
230	....	....	....	....	....	....	....	....	28	3
225	....	....	....	....	....	....	....	....	113	2
220	1	....	....	....	....	....	3	55	4	69
200	3	4	....	3	3	4	33	176	310	254
190	....	....	....	....	....	....	....	....	19	25
180	....	....	4	....	7	12	60	51	6	70
170	1	....	....	....	15	7	17	9	16	8
160	....	....	....	....	....	....	....	....	2	9
150	13	2	2	51	46	11	14	27	84	24
140	....	....	4	15	5	1	2	19	12	14
135	....	....	5	2	....	....	2	1	....	.....
130	9	43	22	16	4	2	2	3	8	16
125	105	18	14	21	15	1	5	6	2	3
120	143	125	118	84	13	9	22	15	19	15
115	34	17	13	4	....	....	5	1	13	3
110	87	12	10	6	3	1	4	6	4	5
105	....	....	1	2	....	2	....	....	....	.....
100	83	28	28	8	25	14	55	69	100	61
95	69	40	38	18	15	5	13	20	24	14
90	95	58	69	43	16	36	42	42	54	102
85	20	16	3	16	5	8	35	30	3	8

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years.*— (Continued).

TONNAGE.	NEW BOATS REGISTERED.									
	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.
80	44	28	6	15	22	25	49	37	4	18
75	32	43	17	14	14	21	19	....	4	7
70	10	23	4	3	7	16	4	7	1	10
65	1	2	....	1	3	4	3	2	....	.....
60	2	4	....	3	18	8	2	6	1	6
55	....	....	....	....	....	10	....	....	....	.....
50	1	3	1	....	7	1	2	2	2	5
45	1	....	....	....	1	3	1	....	1	6
40	1	....	1	1	3	....	1	1	....	.....
35	...	....	....	....	....	....	1	....	....	.....
30	....	....	....	1	....	....	....	....	2	9
25	1	1	....	....	3	....	....	1	4	.....
20	....	1	1	....	....	....	1	1	1	4
15	2	1	1	....	1	1	....	....	....	.....
	760	471	363	328	253	204	400	619	848	770

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Continued).

TONNAGE.	NEW BOATS REGISTERED.										
	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
280	....	....	....	....	....	....	....	....	....	....	....
250	....	4	8	2	3	3	7	5	14	1	6
240	1	3	40	47	49	60	49	44	92	176	111
230	3	4	28	42	61	38	37	18	21	20	16
225	11	4	24	29	44	18	10	7	10	26	2
220	30	19	43	47	27	14	11	4	19	41	4
200	98	45	68	56	32	11	13	6	45	20	20
190	3	....	....	5	....	....	...	....	....	....	....
180	7	4	4	....	....	....	2	....	1	1	....
170	....	3	....	....	....	1	....	....	1	2	....
160	2	....	4	....	2	....	1	2	....	....	3
150	24	8	11	12	7	2	....	....	6	4	....
140	15	3	5	7	7	2	2	....	10	16	7
135	....	....	...	....	....	....	....	....	....	15	....
130	3	2	7	20	5	7	19	13	3	5	1
125	5	2	4	4	2	....	2	1	1	10	5
120	6	6	21	16	6	7	7	2	10	2	2
115	4	4	12	....	....	....	2	1	1	35	3
110	2	6	2	....	2	3	2	1	7	33	15
105	....	....	....	....	....	....	....	....	....	8	....
100	38	11	95	114	40	43	30	28	23	14	13
95	38	5	21	....	7	3	4	3	3	5	6
90	66	37	65	83	27	19	13	18	14	3	8

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Continued).

TONNAGE.	NEW BOAT REGISTERED.										
	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
85	4	2	2	....	3	2	5	1	4	1	3
80	19	8	6	22	7	4	5	2	6	6	3
75	1	6	4	7	4	5	4	5	5	6	3
70	7	6	4	4	23	23	9	22	12	1	6
65	....	....	....	....	....	....	....	....	....	....	....
60	6	3	4	2	23	25	31	13	14	....	5
55	....	....	....	....	....	....	....	....	....	....	....
50	1	1	1	1	6	6	2	....	1	....	3
45	3	....	....	....	....	....	....	....	....	1	2
40	....	....	....	....	....	....	....	....	....	....	....
35	....	....	....	....	....	....	....	....	....	....	....
30	....	1	....	....	....	....	....	1	1	1	....
25	1	....	....	....	....	....	....	....	....	....	....
20	1	1	1	....	....	....	1	....	1	....	2
15	....	....	....	....	....	2	1	3	1	....	....
	399	198	484	520	387	298	269	194	326	433	249

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Continued).

TONNAGE.	NEW BOATS REGISTERED.														
	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
280	....	....	....	...	....	1	....	....	....	....	....	10	..	..	...
250	5	2	....	15	19	63	70	12	24	14	34	15	60	37	67
240	35	18	14	116	151	223	109	9	4	2	....	9	3	2	...
230	4	3	....	5	13	23	24	....	....	....	....	1	..	..	...
225	1	1	1	2	1	10	9	1	....	....	1	..	..	..	...
220	3	....	1	3	1	15	5	2	....	....	3	5	1	..	...
200	8	2	1	8	8	17	13	5	....	....	2	1	5	1	...
190	....	....	....	...	....	....	1	1	....	....	....	..	..	1	...
180	....	....	....	2	2	....	....	....	....	....	....	..	..	..	...
170	....	....	....	....	1	....	....	....	....	....	....	..	1	..	...
160	....	3	1	....	1	...	..	....	....	....	....	..	..	1	...
150	....	....	1	....	2	6	10	2	....	....	3	2	1	..	1
140	1	....	....	3	....	1	3	1	1	....	....	..	2	..	...
135	....	....	....	....	....	....	1	....	1	....	....	..	1	..	...
130	1	...	....	2	4	4	....	1	....	....	....	..	1	..	...
125	4	1	1	...	6	19	1	2	....	1	....	..	..	..	...
120	2	1	1	4	4	8	10	1	....	....	....	..	..	1	...
115	....	1	1	....	3	2	4	3	....	....	....	2	..	..	...
110	6	10	6	14	15	....	16	1	1	....	....	1	..	..	1
105	....	....	....	....	....	....	2	....	1	2	....	1	..	..	...
100	5	11	31	30	51	31	31	35	14	5	4	7	10	13	...
95	9	9	1	7	16	4	29	4	9	7	....	4	1	..	7

STATEMENT *showing the various tonnage of the boats registered in the last forty-six years* — (Concluded).

TONNAGE.	NEW BOATS REGISTERED.															
	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
90	10	7	6	28	27	5	8	10	7	4	..	1	1	..	2	...
85	3	....	....	1	1	3	....	....	....	..	..	1	..	..	..	...
80	....	1	....	4	1	1	4	....	1	..	1	1	..	..	..	1
75	....	....	....	5	7	....	7	....	1	..	..	..	1	..	..	...
70	....	1	....	14	10	....	....	....	1	..	..	..	..	..	..	...
65	....	....	....	....	....	....	....	....	....	..	..	..	..	..	..	...
60	1	1	....	22	19	1	5	1	6	..	..	..	..	..	..	...
55	....	....	....	....	....	....	....	....	....	..	..	..	..	..	..	...
50	2	....	....	10	7	....	....	....	....	..	..	1	..	..	..	...
45	....	....	....	....	....	...	....	....	....	1	..	..	..	..	..	...
40	....	....	....	...	....	...	1	....	....	1	..	..	2	..	..	...
35	....	....	....	....	....	....	....	....	....	..	..	..	..	..	..	...
30	....	3	....	....	1	1	1	....	....	..	..	..	..	..	..	...
25	1	....	....	3	2	2	1	....	....	..	..	1	..	..	..	...
20	....	....	1	....	....	....	....	1	....	..	1	1	..	..	..	...
15	1	1	....	....	1	1	1	....	1	..	..	..	..	..	..	...
10	....	....	1	1	4	....	....	....	1	..	..	..	..	..	..	...
5	....	....	1	1	4	....	1	1	....	1	1	..	..	..	..	...
2	....	....	....	....	....	....	....	....	....	..	..	..	..	..	..	...
	....	....	....	....	....	....	....	...	....	..	..	..	..	..	..	...

TONS *of merchandise going to other States by way of Buffalo from* 1860 *to* 1890, *inclusive.*

STATES, ETC.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.
Pennsylvania	1,439	706	861	899	535	420	147	331
Ohio	10,003	5,159	7,340	9,726	6,106	8,093	5,785	5,678
Michigan	13,509	6,476	7,137	6,414	4,782	5,406	4,874	12,885
Indiana	2,967	1,470	793	1,869	1,144	2,151	1,638	2,987
Illinois	24,835	12,108	24,118	21,024	25,842	24,575	41,288	44,579
Wisconsin	13,517	6,920	9,705	20,562	9,856	11,407	11,359	13,116
Kentucky	111	38	351	879	130	206	19	323
Missouri	2,284	706	1,685	1,245	1,680	1,281	1,407	892
Tennessee	18	....	....	....	....	20	....	....
Alabama	....	....	....	....	....	....	....	....
Minnesota	699	489	....	....	3,045	361	863	452
Iowa	1,355	834	850	1,371	3,991	1,992	808	783
Canada	842	332	105	135	227	3,263	188	9
	72,030	35,278	52,945	64,124	57,338	59,175	68,375	83,045

Tons of merchandise going to other States by way of Buffalo, from 1860 *to* 1890, *inclusive* — (Continued).

STATES, ETC.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.
Pennsylv'a	9	12	206	174	821	73	32	90	....	354
Ohio......	9,227	4,926	7,923	4,424	10,571	3,778	1,272	898	124	2,794
Michigan..	8,232	8,339	4,072	4,215	15,299	10,743	2,095	6,296	67	3,151
Indiana...	2,021	2,113	952	1,072	10,133	2,136	416	335	1	119
Illinois....	48,884	47,891	51,161	54,574	40,315	26,916	23,416	5,431	2,341	11,281
Wisconsin.	23,986	6,610	8,532	15,174	15,962	10,780	3,165	1,538	406	2,361
Kentucky..	1,493	....	733	528	565	385	64	88	....	....
Missouri...	2,775	3,163	10,610	14,727	19,284	1,404	430	121	....	....
Tennessee.	....	....	....	....	....	....	....	....	....	....
Alabama..	....	....	....	....	....	....	....	....	....	....
Minnesota.	1,313	13,157	5,487	21,313	10,649	482	381	144	4	....
Iowa......	1,428	4,552	6,510	6,377	4,460	518	673	674	20	266
Canada...	191	....	....	....	18,354	364	115	11,752	307	....
	99,559	90,763	96,186	122,578	146,413	57,579	32,059	27,367	3,270	20,326

Tons of merchandise going to other States by way of Buffalo from 1860 *to* 1890, *inclusive*—(Concluded).

STATES, ETC.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.
Pennsylvania.	999	2,219	....	....	4,211	8,206	....	....	....	4,724
Ohio........	8,148	16,523	23,156	29,067	32,218	28,626	425	....	....	18,658
Michigan....	3,699	3,730	17,684	13,485	4,596	5,993	4,055	....	....	15,629
Indiana.....	2,308	2,393	11,871	9,883	1,404	6,731	50	....	....	11,913
Illinois......	41,684	80,358	72,484	156,403	78,998	76,230	3,450	63,805	55,665	18,483
Wisconsin ...	10,799	12,567	46,968	35,870	6,907	13,864	47,467	37,790	23,595	12,567
Kentucky ...	1,577	2,851	573	270	552	1,873	....	....	....	....
Missouri.....	11,816	19,988	13,882	29,013	3,064	5,010	133	....	....	6,767
Tennessee ...	......	....	....	....	21	....	....	....	....	....
Alabama.....	......	....	....	....	....	....	....	....	....	....
Minnesota...	2,359	2,986	18,199	6,332	3,243	2,992	51,786	40,518	40,984	22,185
Iowa........	2,308	3,818	17,382	15,500	2,165	2,399	2,638	....	....	8,280
Canada......	......	185	....	....	26,069	25,979	12,736	14,000	3,000	29
	85,697	142,618	222,199	295,823	163,448	178,903	201,740	156,113	123,244	119,235

	1888.	1889.	1890.		1888.	1889.	1890.
Ohio	6,212	6,764	13,167	Minnesota	6,774	8,345	15,575
Michigan	2,875	5,309	7,876	Iowa	2,544	4,146	7,202
Illinois	6,033	12,701	21,313	New York	3,250	....	9,594
Wisconsin	2,915	5,261	8,178				
Indiana	2,512	5,204	8,102	Total	33,015	52,200	98,401
Pennsylvania	....	4,470	7,394				

STATEMENT *of the tons of property moved on each and all the canals, comprising the tons of total movement.*

YEARS.	Erie.	Champlain.	Oswego.	Cayuga and Seneca.	Chemung.	Crooked Lake.
1837	667,151	261,659	161,353	20,274	20,288	24,258
1838	744,848	266,553	222,697	23,541	30,256	30,336
1839	845,007	263,552	221,014	26,300	36,089	26,823
1840	829,960	245,229	219,627	32,486	34,217	24,026
1841	906,442	276,418	135,689	34,634	63,042	33,030
1842	712,310	230,844	129,498	31,716	54,866	18,660
1843	819,216	262,212	240,571	25,998	66,247	31,856
1844	945,944	269,546	326,607	31,099	88,231	32,589
1845	1,038,700	266,922	340,481	46,464	114,740	39,489
1846	1,264,408	280,480	351,511	61,014	124,768	35,556
1847	1,661,575	313,124	441,096	58,204	189,165	36,318
1848	1,599,965	293,889	490,147	46,252	150,691	34,155
1849	1,622,444	321,345	557,637	40,440	135,867	36,317
1850	1,635,089	460,219	583,346	42,379	128,263	38,797
1851	1,955,265	513,793	676,321	37,084	159,563	29,309
1852	2,129,334	531,001	684,191	47,275	187,577	35,757
1853	2,196,308	608,354	761,276	58,793	249,980	53,985
1854	2,224,008	602,913	611,533	72,995	270,978	25,349
1855	2,202,463	537,108	654,399	76,744	223,271	25,850
1856	2,107,678	611,610	657,381	131,907	245,621	28,559
1857	1,566,624	547,236	605,218	120,435	187,201	16,571
1858	1,767,004	608,918	688,960	75,968	205,168	16,318
1859	1,753,954	751,046	612,390	80,602	256,323	17,933

1861	2,500,782	545,930	852,920	100,992	208,792	12,239
1862	3,204,277	647,318	1,063,413	125,659	243,628	19,632
1863	2,955,302	878,920	992,173	119,704	307,151	11,230
1864	2,535,792	846,790	765,097	185,161	280,834	6,316
1865	2,523,490	815,311	825,649	192,312	164,796	9,376
1866	2,896,027	1,001,493	990,809	368,233	226,510	12,189
1867	2,920,578	1,047,440	940,136	389,704	145,627	6,558
1868	3,346,986	1,120,585	958,444	515,295	165,875	4,451
1869	2,845,072	1,059,334	934,638	533,516	245,761	7,541
1870	3,083,132	1,143,719	917,728	527,728	206,535	15,825
1871	3,580,922	1,099,995	941,858	445,186	173,281	12,024
1872	3,562,560	1,449,528	832,490	386,977	217,263	7,145
1873	3,602,535	1,195,390	655,588	437,382	257,962	12,831
1874	3,097,122	1,268,292	665,408	378,825	205,602	9,286
1875	2,787,226	1,077,746	486,530	224,492	129,425	....
1876	2,418,422	910,151	370,330	137,264	214,448	....
1877	3,254,367	1,021,782	319,327	247,864	12,026	....
1878	3,608,634	1,040,912	257,254	168,201	8,767	....
1879	3,820,027	1,012,005	333,713	117,027	....	....
1880	4,608,651	1,200,503	427,863	125,331	....	....
1881	3,598,721	986,079	394,542	99,617	....	....
1882	3,694,364	1,097,343	445,295	123,488	....	....
1883	3,587,102	1,366,358	276,350	134,631	....	....
1884	3,389,555	1,118,073	265,541	119,990	....	....
1885	3,208,207	1,139,402	213,079	64,125	....	....
1886	3,308,642	1,119,663	186,484	64,995	....	....
1887	3,840,513	1,229,335	176,177	195,933	....	....
1888	3,321,516	1,198,305	134,078	201,237	....	....
1889	3,673,554	1,187,038	170,078	196,138	....	....
1890	3,303,929	1,520,757	225,936	63,419	....	....

STATEMENT *of the tons of property moved on each and all canals, etc.*—(Concluded).

YEARS.	Chenango.	Genesee Valley.	Black River.	Oneida Lake.	Baldwinsville.	Total.
1837	8,213	....	....	....	....	1,171,296
1838	14,778	....	....	....	....	1,333,011
1839	16,928	....	....	....	....	1,435,713
1840	16,848	13,653	....	....	....	1,416,046
1841	23,356	26,892	....	22,150	....	1,521,661
1842	17,177	41,860	....	....	....	1,236,931
1843	19,026	48,313	....	26,445	....	1,513,439
1844	31,472	65,077	....	25,991	....	1,816,586
1845	38,305	73,546	....	28,808	....	1,977,565
1846	41,112	87,614	....	22,188	....	2,268,662
1847	44,051	95,632	....	30,642	....	2,869,810
1848	35,207	98,467	....	47,451	....	2,796,230
1849	36,557	84,674	....	59,451	....	2,894,732
1850	41,892	89,804	....	56,828	....	3,076,617
1851	40,307	100,000	25,320	45,049	....	3,582,733
1852	44,939	122,901	36,497	43,969	....	3,863,441
1853	76,538	157,164	41,924	43,351	....	4,247,853
1854	77,124	158,942	55,525	34,532	31,945	4,165,862
1855	89,390	102,321	51,347	27,116	32,608	4,022,617
1856	105,502	113,731	68,126	18,485	27,481	4,116,082
1857	96,722	114,576	69,135	19,343	....	3,344,061
1858	72,526	118,303	62,352	19,675	....	3,665,192
1859	89,691	124,263	75,946	19,536	....	3,781,684
1860	83,035	123,602	70,687	18,672	....	4,650,214

1861	91,661	94,329	69,930	30,060	....	4,507,635
1862	79,442	129,974	85,442	....	....	5,598,785
1863	90,215	112,549	90,448	....	....	5,557,692
1864	89,021	71,411	72,519	....	....	4,852,941
1865	68,822	56,581	73,317	....	....	4,729,654
1866	107,472	86,579	85,908	....	....	5,795,220
1867	103,064	64,679	70,539	....	....	5,688,325
1868	112,455	138,364	79,770	....	....	6,442,225
1869	83,527	69,141	80,550	....	....	5,859,080
1870	102,820	79,733	96,329	....	....	6,173,769
1871	39,793	85,269	89,560	....	....	6,467,888
1872	26,519	96,112	94,776	....	....	6,673,370
1873	30,317	86,770	86,017	....	....	6,364,782
1874	33,059	69,393	77,601	....	....	5,804,588
1875	23,769	64,677	65,993	....	....	4,859,858
1876	6,227	47,360	67,927	....	....	4,172,129
1877	....	37,311	63,286	....	....	4,955,963
1878	....	18,569	68,983	....	....	5,171,320
1879	....	....	79,600	....	....	5,362,372
1880	....	....	75,308	....	....	6,457,656
1881	....	....	100,233	....	....	5,179,192
1882	....	....	106,933	....	....	5,467,423
1883	....	....	128,656	....	....	5,664,056
1884	....	....	116,359	....	....	5,009,488
1885	....	....	106,971	....	....	4,731,784
1886	....	....	114,198	....	....	5,293,982
1887	....	....	111,847	....	....	5,553,805
1888	....	....	118,213	....	....	4,942,948
1889	....	....	143,561	....	....	5,370,369
1890	....	....	132,061	....	....	5,246,102

Value of the total movement of articles on all the canals from 1837 *to* 1890, *both years inclusive, was as follows:*

YEARS.	Products of the forest.	Agriculture.	Manufactures.	Merchandise.	Other articles.	Total.
1837	$6,146,716	$16,201,331	$6,390,486	$23,935,990	$3,134,766	$55,809,288
1838	6,338,063	19,390,714	5,915,856	31,594,692	2,507,234	65,746,559
1839	7,762,553	17,056,911	5,989,576	39,493,764	3,096,960	73,399,764
1840, Gen. Val. can'l opened.	4,609,035	18,644,481	4,719,054	35,636,943	2,694,379	66,303,892
1841	11,841,103	21,901,713	5,422,615	50,134,320	2,903,178	92,202,929
1842	5,957,219	16,987,843	4,435,289	30,042,153	2,594,104	60,016,608
1843	6,653,080	20,588,118	4,925,545	40,651,798	3,458,368	76,276,909
1844	7,422,737	23,379,643	6,151,806	49,224,099	4,742,867	90,921,152
1845	6,472,237	25,479,488	6,994,932	52,542,336	5,140,866	100,629,859
1846	6,422,409	35,820,586	7,015,311	62,004,488	4,349,315	115,612,109
1847	7,546,063	55,757,166	8,072,059	74,753,638	5,434,502	151,563,428
1848	7,219,350	42,850,086	7,433,957	76,945,463	5,637,301	140,086,157
1849	8,671,057	46,408,092	7,183,930	77,094,282	5,374,924	144,732,285
1850	15,117,661	46,152,958	7,933,108	81,135,199	6,059,003	156,397,929
1851	12,549,754	43,277,458	8,255,575	88,531,320	7,367,694	159,981,801
1852	11,526,436	49,437,555	6,294,120	122,624,170	6,721,236	196,603,517
1853	14,001,506	57,482,815	8,091,100	118,317,856	9,286,293	207,179,570
1854	14,384,785	51,980,864	9,796,420	123,167,863	10,954,380	210,284,312
1855	10,545,615	58,222,314	10,467,559	113,572,523	11,582,136	204,390,147
1856	10,211,383	51,030,453	10,308,419	135,691,816	11,084,991	218,327,062
1857	9,827,410	30,955,369	9,330,067	74,633,905	12,250,267	136,997,018
1858	8,963,443	50,142,318	9,352,955	61,236,319	8,873,809	138,568,844
1859	10,798,769	34,044,601	8,757,059	65,072,972	13,487,357	132,160,758
1860	10,654,710	55,838,977	8,113,177	84,252,425	11,989,909	170,849,198

1861	6,462,614	57,861,720	6,718,273	49,707,729	9,365,557	130,115,893
1862	11,305,954	84,239,370	12,314,651	83,640,903	11,733,453	203,234,331
1863	13,421,909	101,090,511	13,044,051	91,417,513	21,072,477	240,046,461
1864	22,589,060	116,051,564	22,582,718	80,391,550	32,785,747	274,400,639
1865	21,011,122	83,670,467	18,095,266	102,627,877	30,832,372	256,237,104
1866	28,754,821	86,610,934	18,389,992	100,169,211	37,038,718	270,963,676
1867	28,977,470	81,616,663	16,877,334	108,545,569	42,939,676	278,956,712
1868	24,039,591	76,383,656	17,298,574	131,786,764	55,793,344	305,301,920
1869	21,930,655	55,528,825	13,595,892	103,464,505	54,761,407	249,281,284
1870	22,266,184	49,231,912	10,777,897	94,852,914	54,707,269	231,836,176
1871	27,309,303	68,130,282	10,881,540	78,898,185	53,548,381	238,767,691
1872	35,599,734	49,541,259	7,659,547	93,997,415	34,115,366	220,913,321
1873	18,651,838	60,194,909	5,979,656	76,173,336	30,715,761	191,715,500
1874	17,840,356	64,344,898	7,094,531	64 477,540	42,916,997	196,674,322
1875	12,478,669	50,540,911	6,311,137	40,885,448	34,792,410	145,008,575
1876	11,132,966	32,439,857	3,375,119	31,069,375	35,073,062	113,090,379
1877	15,574,893	46,765,635	10,911,786	46,130,795	21,028,903	139,411,963
1878	12,703,074	52,264,813	17,834,755	70 433,563	29,021,323	182,254,528
1879	12,053,499	56,826,653	37,173,222	144,653,500	34,573,762	285,280,726
1880	14,351,622	68,994,218	14,236,227	109,870,264	40,392,459	247,844,790
1881	18,399,932	43,440,343	11,863,021	75,331,308	13,148,961	162,153,565
1882	20,285,512	42,766,687	4,673,440	61,769,417	18,423,851	147,918,907
1883	18,038,056	39,727,973	3,426,474	68,281,320	18,387,400	147,861,223
1884	27,588,279	37,335,779	3,125,433	78,864,806	15,182,754	162,097,069
1885	17,302,705	31,404,325	2,827,280	58,215,252	9,786,627	119,536,189
1886	16,471,406	41,191,562	3,310,422	103,749,354	15,339,102	180,061,846
1887	15,568,667	42,729,684	4,808,178	82,161,364	13,978,084	159,245,977
1888	14,899,643	33,546,141	3,207,881	56,913,813	13,957,257	122,524,735
1889	17,012,190	30,014,906	5,908,500	80,590,288	21,058,338	154,584,222
1890	21,888,280	32,690,782	1,879,276	73,838,260	15,464,488	145,761,086

STATEMENT *of the total movement of flour, meal and grain on all the canals, from* 1861 *to* 1890.

YEARS.	Barrels wheat flour.	Barrels rye flour.	Barrels corn meal.	Bushels wheat.	Bushels corn.	Bushels oats.
1861	1,667,416	....	2,176	33,171,900	25,024,643	6,105,313
1862	2,102,574	....	18,416	37,579,967	27,225,643	6,550,187
1863	1,930,731	....	44,704	26,577,166	22,287,036	16,040,937
1864	1,474,582	....	51,305	19,932,067	11,086,536	15,122,937
1865	1,271,129	....	24,018	14,433,566	20,689,500	11,973,939
1866	751,870	....	17,972	10,989,800	28,904,143	12,138,250
1867	569,334	....	12,808	13,630,300	17,930,500	10,476,000
1868	575,900	....	14,861	14,425,567	18,437,100	11,927,250
1869	657,870	....	12,666	22,351,133	9,159,643	5,769,312
1870	509,055	....	12,250	21,950,800	6,893,893	7,371,312
1871	381,583	....	6,611	23,951,633	24,002,035	8,118,187
1872	190,129	....	6,046	13,463,433	32,241,179	5,809,938
1873	181,731	....	9,342	26,768,800	22,760,571	4,376,437
1874	269,759	....	8,314	25,738,766	18,542,964	3,713,000
1875	163,287	....	3,000	24,809,766	10,072,536	3,919,813
1876	86,019	....	232	13,879,200	13,044,786	3,259,188
1877	82,621	....	3,120	14,934,766	25,837,786	4,127,812
1878	54,666	....	5,666	28,151,866	26,249,750	5,314,313
1879	66,333	....	8,130	31,648,866	22,185,000	1,447,750
1880	76,537	....	12,620	32,201,733	41,307,821	1,305,812
1881	64,129	....	13,370	14,827,733	16,993,679	1,895,063
1882	86,777	....	17,370	21,407,166	8,988,821	1,386,250
1883	83,768	....	1,777	19,124,666	18,677,785	3,225,438

1884........................	67,138	....	343	26,346,966	7,079,143	3,293,500
1885........................	63,602	....	703	18,864,066	12,856,500	514,625
1886........................	83,296	....	5,435	33,270,966	12,670,178	454,875
1887........................	37,861	....	65	31,228,000	15,950,607	2,210,312
1888........................	30,463	....	2,629	19,373,366	17,846,464	4,445,562
1889........................	40,555	....	1,713	16,137,900	21,162,536	3,980,000
1890........................	32,046	....	10,740	11,789,700	21,998,000	2,961,437

STATEMENT *of total movement of flour, meal and grain on all the canals, etc.*— (Concluded).

YEARS.	Bushels barley.	Bushels rye.	Bushels peas and beans.	Bushels malt.	Aggregate in tons.
1861	2,444,083	976,000	347,233	....	2,070,251
1862	2,764,916	967,750	375,433	280,182	2,332,928
1863	3,816,458	592,571	530,700	366,242	2,021,505
1864	3,232,292	670,168	550,000	565,294	1,437,598
1865	5,336,416	1,220,714	401,533	725,151	1,530,037
1866	7,867,041	1,751,928	536,667	298,212	1,680,169
1867	4,972,250	1,044,643	827,133	479,818	1,322,774
1868	3,698,083	873,357	391,667	257,029	1,350,090
1869	4,125,500	481,750	379,233	330,400	1,221,397
1870	5,132,958	697,143	226,123	698,686	1,189,267
1871	4,749,662	1,234,392	162,700	801,371	1,759,882
1872	5,002,543	477,036	146,600	1,578,914	1,586,249
1873	2,941,083	1,077,143	393,300	1,182,466	1,660,981
1874	4,110,584	293,393	200,566	453,200	1,500,490
1875	4,353,125	296,750	195,200	71,287	1,238,115
1876	4,020,584	712 464	174,200	1,510 629	991,197
1877	5,810,542	1,283,857	162,533	718,800	1,439,662
1878	3,730,583	2,307,607	167,100	1,031,000	1,846,749
1879	4,006,000	2,114,643	124,466	582,706	1,770,846
1880	4,426,958	940,714	149,369	820,824	2,304,215
1881	3,399,458	553,000	101,334	887,526	1,074,545
1882	4,027,083	1,549,000	206,834	846,824	1,087,953
1883	2,449,291	3,401,643	43,666	952,706	1,329,099

1884	2,708,666	2,552,214	185,735	707,235	1,198,346
1885	2,691,135	364,678	70,000	604,706	1,028,260
1886	2,619,916	108,750	151,366	901,941	1,446,972
1887	3,144,083	239,892	14,133	781,588	1,498,304
1888	873,208	438,143	64,000	940,176	1,116,733
1889	2,754,541	1,289,357	694,333	1,640,588	1,277,118
1890	3,268,321	800,500	66,833	1,201,058	1,158;029

STATEMENT *of foreign exports of flour and grain from New York, from* 1861 *to* 1890.

YEARS.	Barrels wheat flour.	Barrels rye flour.	Barrels corn meal.	Bushels wheat.	Bushels corn.	Bushels oats.
1861	3,110,646	11,807	108,385	28,889,914	12,456,265	160,875
1862	2,961,518	8,397	132,606	25,564,755	12,020,848	210,669
1863	2,527,338	5,461	140,561	15,424,889	7,533,431	126,566
1864	1,918,393	2,840	105,142	12,193,433	846,831	42,135
1865	1,402,144	2,673	127,600	2,527,626	2,549,670	94,567
1866	900,084	7,552	149,773	522,669	11,079,394	1,190,583
1867	871,089	11,754	151,669	4,468,774	8,147,813	144,665
1868	1,003,968	7,459	191,011	5,762,037	5,989,225	94,707
1869	1,584,211	5,283	137,627	18,240,586	1,637,586	49,393
1870	1,950,234	....	....	18,446,035	487,792	28,986
1871	1,660,400	4,200	123,500	21,968,600	13,046,600	47,300
1872	1,216,082	6,399	194,040	13,144,400	25,292,200	31,739
1873	1,655,331	8,249	176,756	27,801,800	15,587,500	49,700
1874	2,177,608	8,473	168,603	34,791,249	19,000,995	122,528
1875	1,954,100	5,700	173,400	26,192,700	12,938,700	138,800
1876	1,887,441	5,778	172,042	24,144,033	16,610,232	620,536
1877	1,537,106	7,999	220,939	21,355,774	25,373,942	257,634
1878	2,630,437	4,375	202,788	55,019,389	27,440,771	3,658,905
1879	3,684,366	6,049	150,178	61,538,861	35,319,789	521,406
1880	4,215,415	5,204	203,716	61,908,029	49,875,430	427,959
1881	4,440,114	3,264	196,985	41,798,182	31,731,995	431,426
1882	4,623,956	....	112,316	37,620,103	9,012,373	170,586

1883	4,330,146	....	....	20,049,200	22,222,754	162,655
1884	3,907,021	....	530	28,687,362	11,862,158	2,456,219
1885	3,763,029	3,863	152,488	16,286,800	26,259,228	6,198,302
1886 not reported	....	....	....	....	....	....
1887, to December first, only	3,731,523	....	105,735	40,893,437	11,920,425	142,938
1888, to December first, only	3,476,991	....	107,589	12,224,374	12,101,098	112,069
1889, to December first, only	3,056,855	....	135,006	9,627,444	27,380,443	885,257
1890	3,417,399	....	136,432	12,549,946	24,550,165	9,301,046

STATEMENT *of foreign exports of flour and grain, etc.* — (Concluded).

YEARS.	Bushels barley.	Bushels rye.	Bushels peas and beans.	Bushels malt.	Aggregate in tons.
1861	3,927	1,000,405	139,284	....	1,599,261
1862	42,061	1,104,549	113,819	....	1,477,321
1863	52,439	416,369	110,911	....	980,675
1864	150	588	186,154	....	614,642
1865	....	198,348	88,899	....	322,454
1866	1,329,842	248,646	282,992	....	506,520
1867	886,893	473,260	680,763	....	531,204
1868	90	152,993	189,226	....	481,902
1869	....	142,542	123,156	....	788,075
1870	....	92,431	151,102	....	785,249
1871	98,700	525,800	90,900	....	1,238,053
1872	22,066	668,030	156,609	....	1,378,412
1873	19,400	1,069,100	143,500	....	1,504,771
1874	3,560	641,661	463,193	....	1,863,297
1875	1,500	206,900	364,900	....	1,405,544
1876	88,097	1,336,283	716,428	....	1,483,402
1877	2,412,509	2,049,796	487,031	....	1,675,902
1878	1,518,922	4,048,841	476,184	....	2,949,042
1879	147,867	3,941,638	393,153	....	3,383,953
1880	254,833	2,181,183	651,669	....	3,825,168
1881	15,477	1,068,928	218,370	....	2,687,356
1882	6,616	1,980,586	572,567	....	1,967,989

1883	8,939	4,467,853	....	....	1,819,284
1884	76,343	4,846,088	770,729	....	1,413,686
1885	408	493,319	....	....	1,759,840
1886, not reported	....	....	....	....	....
1887, to December first, only	46,189	356,847	185,877	....	2,193,962
1888, to December first, only	48	6,237	182,511	....	1,098,641
1889, to December first, only	226	809,405	244,246	....	1,440,719
1890	275,313	1,351,726	371,814	....	1,652,144

LOCKAGES *for season of* 1890.

	Lock No. 1, Erie.	Lock No. 2, Erie.	Lock No. 3, Erie.	Lower side-cut.	Lock No. 23, Erie.	Fort Plain, No. 32.	Lock No. 45, Erie.	Lock No. 66, Erie.
May	699	887	2,222	176	2,259	2,392	2,245	2,222
June	886	1,279	2,088	261	2,169	2,248	2,714	1,940
July	1,198	1,450	2,115	316	2,389	2,766	2,832	2,436
August	1,027	1,265	1,954	181	2,256	2,558	2,648	2,284
September	1,049	1,227	1,988	316	2,145	2,294	2,186	2,014
October	1,063	1,478	2,268	404	2,506	2,663	2,712	2,299
November............	1,510	1,550	1,683	244	1,826	2,160	2,298	1,677
Total	7,432	9,136	14,318	1,898	15,550	17,081	17,635	14,872

LOCKAGES *for the season of* 1890 — (Concluded).

	Lockport locks.	Tonawanda lock.	Lock No. 72, Erie.	Fort Edward lock.	Whitehall lock.	Junction lock, Champlain.	Sloop lock.	Lock No. 5, Champlain.	Lock No. 50, Erie.
May	2,570	1,196	1,920	1,143	799	642	343	1,255	1,313
June	2,220	1,408	1,500	2,597	1,720	1,942	778	2,620	2,151
July	2,786	1,455	1,952	2,648	2,084	2,336	729	2,693	2,648
August........	2,573	1,567	1,687	2,814	2,040	2,011	774	2,594	2,391
September.....	2,245	1,358	1,479	2,188	1,604	1,437	998	2,110	2,213
October	2,630	1,444	1,923	2,099	1,328	1,402	800	1,941	2,519
November . ..	1,956	806	1,441	1,625	693	1,113	590	1,539	1,977
Total......	16,980	9,234	11,902	15,114	10,268	10,883	5,012	14,752	16,212

STATEMENT *of the number of clearances issued at each office on all the canals from* 1833 *to* 1890, *inclusive.*

YEARS.	ERIE CANAL.									
	New York.	Albany.	West Troy.	Schenectady.	Fultonville.	Little Falls.	Utica.	Rome,	Syracuse.	Jordan.
1833	......	8,932	6,698	2,296	......	749	2,832	1,488	2,305	.....
1834	......	9,283	6,942	3,203	......	860	3,211	1,890	3,048	.....
1835	......	10,967	7,378	3,868	......	813	3,005	3,007	2,542	.....
1836	......	10,235	6,801	3,358	1,142	788	3,403	2,087	2,544	.....
1837	......	9,147	6,394	2,000	1,174	768	3,467	1,908	2,892	.....
1838	......	9 530	6,530	2,567	977	1,015	3,924	1,804	3,206	.....
1839	......	8,331	7 607	4,431	1,027	906	3,322	1,750	3,490	.....
1840	......	8,860	6,868	4 678	954	999	2,780	1,688	3,510	.....
1841	......	9,620	7,170	2,560	904	1,070	3,155	1,749	4,161	.....
1842	......	9,293	7,143	1,235	882	636	3,316	1,423	3,614	.....
1843	......	8,600	7,813	1,244	1,025	612	3,564	1,452	3,922	.....
1844	......	10,345	9,048	1,073	775	481	3,465	1,497	4,735	.....
1845	......	10,240	9,811	1,068	978	542	3,838	1,950	4,447	.....
1846	989	10,170	10,308	1,149	912	700	3,889	1,959	4,409	.....
1847	1,560	12,637	11,630	1,120	993	683	4,762	2,254	5,710	.....
1848	1,141	10,501	11,008	1,194	834	761	4,817	2,332	5,217	.....
1849	1,502	10,920	10,840	1,170	738	568	3,325	1,941	3,229	.....
1850	2,175	11,694	11,776	1,006	868	585	4,202	2,473	2,935	.....
1851	2,634	12,408	11,515	851	696	506	5,013	2,829	2,733	.....
1852	2,649	12,687	12,247	976	849	648	3,468	3,645	2,338	.....
1853	2,820	13,058	11,988	849	541	534	3,208	5,795	2,554	.....

1854	3,219	11,136	9,958	862	493	603	3,975	3,967	4,006	872
1855	2,377	8,676	9,501	881	552	554	3,958	4,196	3,344	588
1856	2,605	7,713	11,996	696	527	503	3,566	2,818	3,993	783
1857	1,724	6,128	8,017	576	444	507	3,441	3,213	4,273	611
1858	1,603	6,859	8,097	435	398	461	3,164	2,923	3,945	617
1859	1,361	6,184	7,349	579	479	453	3,167	3,194	3,808	547
1860	2,439	7,524	10,344	541	433	463	3,225	2,883	4,017	.....
1861	2,695	6,710	9,358	607	637	534	3,171	2,761	4,728	.....
1862	1,311	8,301	11,233	557	518	466	3,148	2,873	5,044	.....
1863	1,376	7,242	11,065	509	448	448	3,272	2,981	4,054	.....
1864	2,279	6,011	8,649	415	343	345	2,913	2,444	3,500	.....
1865	2,787	5,377	7,417	577	316	367	3,054	2,479	3,406	.....
1866	3,079	6,392	7,829	644	305	376	3,436	2,957	3,365	.....
1867	2,765	6,176	8,578	556	341	362	3,055	2,390	3,712	.....
1868	3,052	6,000	7,649	672	384	342	3,003	2,524	4,024	.....
1869	2,693	5,685	7,001	676	373	366	3,719	2,701	4,224	.....
1870	2,376	5,851	8,331	912	474	370	3,722	2,728	4,459	.....
1871	2,473	6,196	7,474	885	419	328	2,408	2,746	4,753	.....
1872	4,174	6,111	8,080	985	343	314	2,307	2,551	4,234	.....
1873	3,541	5,165	8,098	1,068	393	300	1,977	1,198	5,440	.....
1874	2,797	5,228	7,378	857	381	347	2,334	1,865	3,860	.....
1875	2,735	3,918	6,425	577	461	272	1,664	1,499	3,430	.....
1876	2,319	3,852	6,805	649	448	320	1,202	1,478	3,289	.....
1877	4,530	4,361	6,893	......	......	......	1,306	1,361	4,016	.....
1878	4,921	5,321	8,182	......	......	......	1,037	1,393	2,975	.....
1879	5,777	4,620	7,128	......	......	......	1,020	1,449	3,120	.....
1880	6,733	5,478	8,938	......	......	......	1,190	1,545	3,644	.....
1881	......	5,515	9,389	......	......	......	2,312	......	3,657	.....
1882	......	6,194	10,033	......	......	......	2,397	......	3,798	.....

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*—(Continued).

YEAR.	ERIE CANAL.									
	New York.	Albany.	West Troy.	Schenectady.	Fultonville.	Little Falls.	Utica.	Rome.	Syracuse.	Jordan.
1883	......	6,391	8,976	......	......	......	......	......	4,493	.....
1884	......	5,572	8,210	......	......	......	......	......	3,907	.....
1885	......	4,753	7,186	......	......	......	......	......	4,753	.....
1886	......	5,299	9,707	......	......	......	......	......	4,986	.....
1887	......	5,396	9,256	.....	......	......	......	......	4,740	.....
1888	......	4,254	7,682	......	......	......	......	......	4,765	.....
1889	......	4,786	7,810	......	......	......	......	......	6,075	.....
1890	......	4,615	8,254	......	......	......	......	......	5,530	.....

STATEMENT *of the number of clearances issued at each office on all the canals, etc.* — (Continued).

YEARS.	ERIE CANAL.								
	Montezuma.	Lyons.	Palmyra.	Rochester.	Brockport.	Albion.	Medina.	Lockport.	Tonaw'nda.
1833	2,721	560	638	3,270	841	588	......	782	....
1834	4,660	750	810	4,479	1,018	579	......	924	....
1835	2,340	621	564	4,347	865	586	......	1,230	....
1836	5,441	479	602	4,880	700	437	......	1,060	....
1837	4,682	852	597	4,902	598	597	......	719	....
1838	4,732	615	604	4,379	459	414	......	616	....
1839	4,964	623	681	4,401	546	519	......	872	....
1840	4,988	779	1,169	5,940	625	618	......	687	....
1841	5,336	621	762	6,080	581	750	......	1,423	....
1842	3,927	536	877	6,064	702	876	......	1,113	....
1843	4,034	417	632	5,893	611	744	......	1,162	....
1844	4,350	237	429	5,819	479	481	......	1,002	....
1845	5,036	373	605	6,320	500	545	......	1,188	....
1846	5,179	502	654	7,524	554	646	......	1,452	....
1847	5,720	529	731	8,630	600	731	......	1,545	....
1848	6,111	715	748	7,800	1,076	661	......	2,001	....
1849	4,234	501	683	6,907	3,167	697	......	1,741	....
1850	4,049	444	723	5,642	1,228	748	......	2,060	1,331
1851	3,994	561	729	6,286	874	696	715	1,612	1,979
1852	3,941	502	677	5,476	934	458	728	1,379	2,254
1853	4,183	426	556	5,054	846	283	802	1,283	1,951
1854	5,937	496	432	4,710	466	446	681	1,029	1,607
1855	5,359	550	355	3,861	749	551	1,382	1,103	1,858

STATEMENT *of the number of clearances issued at each office on all the canals, etc.* — (Continued).

YEARS.	ERIE CANAL.								
	Montezuma.	Lyons.	Palmyra.	Rochester.	Brockport.	Albion.	Medina.	Lockport.	Tonawanda
1856	4,756	379	464	3,785	588	270	866	889	1,486
1857	4,274	375	370	3,033	413	265	840	861	1,356
1858	3,120	377	361	3,506	383	295	662	878	1,018
1859	3,455	471	415	3,164	419	284	598	819	857
1860	3,787	415	432	3,680	428	444	512	1,030	1,126
1861	3,792	454	362	3,519	386	353	390	998	899
1862	4,441	......	534	3,954	197	400	......	1,030	997
1863	4,735	......	566	4,245	529	462	......	1,304	1,074
1864	4,422	......	433	2,716	383	272	......	1,233	1,084
1865	4,316	......	400	2,225	329	310	......	966	854
1866	5,209	......	423	2,584	247	285	......	977	863
1867	4,572	......	450	2,199	375	339	......	932	896
1868	5,989	......	462	2,769	346	308	......	943	895
1869	5,842	......	513	1,857	301	354	441	732	1,025
1870	6,458	......	567	1,857	334	317	545	746	1,071
1871	5,808	......	550	1,917	365	347	652	789	1,054
1872	6,640	......	472	1,880	292	264	422	623	1,065
1873	7,486	......	625	2,449	349	351	588	897	1,485
1874	5,924	......	627	1,674	371	357	577	936	1,838
1875	4,792	......	496	1,340	344	369	416	652	1,559
1876	4,342	......	423	1,426	377	335	373	511	1,932
1877	2,832	......	......	1,480	......	......	......	......	2,375
1878	2,829	......	......	1,143	......	......	......	......	2,358

1879	2,239	......	......	858	......	......	......	......	2,758
1880	2,447	......	248	972	......	......	......	......	2,921
1881	......	......	......	1,479	......	......	......	......	3,422
1882	......	......	......	1,320	......	......	......	......	3,998
1883	......	......	......	1,230	......	......	......	......	3,300
1884	......	......	......	1,523	......	......	......	......	4,065
1885	......	......	......	1,632	......	......	......	......	3,632
1886	......	......	......	1,836	......	......	......	......	2,009
1887	......	......	......	2,144	......	......	......	......	3,652
1888	......	......	......	1,834	......	......	......	......	3,200
1889	......	......	......	2,148	......	......	......	......	3,960
1890	......	......	......	2,878	......	......	......	......	3,655

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*— (Continued).

YEARS.	ERIE.			CHAMPLAIN.					
	Black Rock.	Buffalo.	Total.	Waterford and Sloop lock.	Schuyler-ville.	Fort Edward.	Glens Falls.	Whitehall.	Total.
1833	......	2,774	37,571	2,616	1,349	......	......	2,869	6,834
1834	......	4,008	45,662	3,484	1,498	......	......	3,245	8,228
1835	......	5,173	49,308	3,564	1,606	......	......	3,957	8,127
1836	......	5,816	48,773	2,880	1,580	......	......	3,867	8,325
1837	......	4,755	45,051	1,771	1,414	......	......	3,034	6,319
1838	.....	5,970	46,342	1,462	1,411	......	......	3,290	6,163
1839	979	5,013	49,392	1,538	1,493	......	......	3,356	6,387
1840	956	4,851	50,959	952	1,285	......	......	3,802	6,039
1841	1,459	5,682	53,193	1,416	1,653	......	......	3,534	6,603
1842	1,149	5,174	47,959	706	1,434	......	......	3,275	4,709
1843	1,222	5,994	48,942	820	1,242	......	......	3,061	4,303
1844	2,493	6,900	51,609	939	1,401	......	......	3,509	4,911
1845	1,377	6,375	55,190	1,045	1,605	......	......	3,523	5,128
1846	1,535	8,212	60,743	1,415	1,675	......	......	3,515	6,605
1847	1,831	11,136	72,801	1,100	1,759	......	......	4,078	6,937
1848	1,145	9,407	66,462	1,295	1,540	......	......	3,619	6,454
1849	1,504	9,132	60,769	866	775	......	866	3,849	5,996
1850	937	9,805	64,732	814	702	......	1,013	4,429	6,958
1851	999	10,380	68,120	807	908	......	1,101	3,950	6,766
1852	1,243	9,662	66,760	1,205	1,089	......	2,273	4,146	7,714
1853	1,517	9,248	67,497	1,644	1,108	......	1,612	5,501	9,861
1854	1,047	9,833	65,875	1,176	1,123	......	1,515	3,967	7,785

1855	1,134	9,874	61,405	1,122	1,264	......	1,210	3,825	7,421
1856	1,143	7,982	57,828	860	1,131	......	1,585	4,049	7,625
1857	......	6,455	47,176	1,929	1,118	......	1,314	3,393	7,754
1858	......	6,306	45,408	2,813	......	2,543	......	3,451	8,807
1859	......	4,839	42,442	3,160	......	2,691	......	4,041	9,892
1860	......	7,541	51,264	3,658	......	2,576	......	4,061	10,295
1861	......	9,584	51,938	2,796	......	2,487	......	2,539	7,822
1862	......	11,185	56,189	3,704	......	2,341	......	3,573	9,618
1863	......	9,556	53,861	3,643	......	2,864	......	4,361	10,868
1864	......	7,943	45,385	3,473	......	2,760	......	4,099	10,332
1865	......	6,944	42,124	2,668	......	2,632	......	4,016	9,336
1866	......	8,519	47,490	3,600	......	2,791	......	4,979	11,370
1867	......	7,664	45,362	5,184	......	2,784	......	5,179	13,147
1868	......	7,761	47,123	3,916	......	3,228	......	4,812	11,956
1869	......	6,725	45,228	4,564	......	2,632	......	4,671	11,867
1870	......	6,835	47,953	3,718	......	2,380	......	5,356	11,454
1871	......	8,795	48,959	4,651	......	2,713	......	5,015	12,379
1872	......	8,659	49,416	4,528	......	3,040	......	5,870	13,438
1873	......	9,063	51,473	3,681	......	2,204	......	4,929	10,814
1874	......	7,643	44,994	3,591	......	2,494	......	3,967	10,052
1875	......	6,365	37,284	3,261	......	2,116	......	3,877	9,254
1876	......	4,850	34,931	2,464	......	1,807	......	3,283	7,554
1877	......	6,938	36,092	2,002	......	2,010	......	3,535	7,547
1878	......	9,047	39,206	2,248	......	2,349	......	3,390	7,987
1879	......	8,708	37,677	2,244	......	1,701	......	3,856	7,801
1880	......	10,623	44,739	2,462	......	1,995	......	4,868	9,325
1881	......	6,317	32,091	3,237	......	......	......	3,858	7,095
1882	......	6,613	34,353	3,713	......	......	......	3,949	7,662
1883	......	6,801	......	3,851	......	......	......	3,685	......

STATEMENT *of the number of clearances issued at each office on all the canals, etc.* — (Continued).

YEARS.	ERIE.			CHAMPLAIN.					
	Black Rock	Buffalo.	Total.	Waterford and Sloop lock.	Schuyler-ville.	Fort Edward.	Glens Falls.	Whitehall.	Total.
1884	......	6,412	29,599	3,474	......	......	......	2,754	6,228
1885	......	5,670	27,626	3,473	......	......	......	2,722	6,195
1886	......	7,414	31,245	3,060	......	......	......	3,114	6,174
1887	......	7,925	36,113	3,001	......	......	......	3,538	6,539
1888	......	5,958	27,693	2,760	......	......	......	2,862	5,622
1889	......	6,855	31,634	3,657	......	......	......	2,859	6,516
1890	......	6,429	31,361	4,523	......	......	......	4,960	9,483

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*—(Continued).

YEARS.	OSWEGO.				CAYUGA AND SENECA.			
	Salina.	Phœnix.	Oswego.	Total.	Seneca Falls.	Geneva.	Ithaca.	Total.
1833	2,825	......	914	3,739	......	1,086	......	......
1834	5,230	......	1,637	6,867	......	1,894	......	......
1835	5,488	......	2,275	7,763	......	1,692	......	......
1836	4,842	......	2,028	6,870	......	1,730	......	......
1837	4,878	......	1,773	6,651	......	1,385	......	......
1838	5,782	......	2,082	7,864	......	1,361	......	......
1839	6,071	......	2,385	8,456	......	1,213	......	......
1840	5,492	......	1,980	7,472	......	1,223	......	......
1841	6,286	......	2,839	9,125	......	1,421	......	......
1842	4,530	......	2,343	6,877	......	1,397	......	......
1843	5,544	......	2,407	7,447	......	1,068	......	......
1844	6,841	......	3,363	10,204	......	1,249	......	......
1845	6,877	......	3,419	10,296	......	1,449	......	......
1846	9,169	......	3,898	11,067	......	1,881	......	......
1847	8,172	......	4,666	12,838	......	1,814	......	......
1848	8,299	......	4,177	12,406	......	1,632	......	......
1849	3,933	......	3,928	7,861	......	269	......	......
1850	3,773	......	3,978	7,551	......	289	......	......
1851	3,298	......	4,773	8,071	......	1,036	......	......
1852	3,050	......	5,794	7,884	......	954	......	......
1853	3,298	......	5,831	9,129	......	1,016	......	......
1854	5,943	2,372	5,001	13,316	1,002	855	......	1,857

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*— (Continued).

YEARS.	OSWEGO.				CAYUGA AND SENECA.			
	Salina.	Phœnix.	Oswego.	Total.	Seneca Falls.	Geneva.	Ithaca.	Total.
1855	5,463	2,293	5,092	12,848	1,120	851	......	1,971
1856	5,857	2,137	6,833	14,827	845	562	1,032	2,439
1857	4,390	1,414	4,329	10,133	545	640	912	2,097
1858	6,533	1,888	5,117	13,538	594	770	376	1,740
1859	5,667	1,371	3,988	11,026	543	834	341	1,708
1860	6,050	1,985	6,263	14,298	878	1,091	......	1,969
1861	5,720	1,470	5,306	12,496	634	1,017	......	1,651
1862	6,542	1,576	5,483	13,601	....	1,508	......	1,508
1863	6,020	1,258	4,720	11,998	....	1,192	......	1,192
1864	4,528	959	3,767	9,254	....	1,533	......	1,533
1865	4,510	1,011	3,798	9,319	....	2,071	......	2,071
1866	5,136	883	4,273	10,992	....	2,464	......	2,464
1867	4,354	789	4,021	9,164	....	2,385	......	2,385
1868	4,415	813	4,129	9,357	....	3,414	......	3,414
1869	3,832	620	4,012	8,464	....	3,435	......	3,435
1870	3,522	676	3,955	8,153	....	3,217	......	3,217
1871	3,395	692	3,907	7,994	....	2,786	......	2,786
1872	3,710	529	3,303	7,542	....	2,572	......	2,572
1873	3,236	520	2,929	6,685	....	2,648	......	2,648
1874	2,980	564	2,877	6,421	....	2,136	......	2,136
1875	2,007	452	2,035	4,494	....	1,392	......	1,392
1876	2,181	......	1,717	3,898	....	853	......	853
1877	......	......	1,902	1,902	....	1,700	......	1,700

1878	......	......	1,516	1,516	....	1,091	......	1,091
1879	......	......	1,803	1,803	....	751	......	751
1880	......	......	2,241	2,241	....	817	......	817
1881	......	......	2,075	2,075	....	717	......	717
1882	......	......	2,200	2,200	....	745	......	745
1883	......	......	1,809	......	....	797	......	......
1884	......	......	1,265	1,265	....	748	......	748
1885	......	......	1,255	1,255	....	725	......	725
1886	......	......	1,281	1,281	....	680	......	680
1887	......	......	916	916	....	978	......	978
1888	......	......	815	815	....	947	......	947
1889	......	......	940	940	....	1,216	......	1,216
1890	......	......	960	960	....	619	......	619

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*—(Continued).

YEARS.	CHEMUNG.					CROOKED LAKE.			CHENANGO.			
	Havana.	Watkins.	Horse-heads.	Corning.	Total.	Dresden.	Penn Yan.	Total.	Hamilton.	Oxford.	Bingham-ton.	Total.
1833	82	.....	170	.....	1,253	153	.....	153	.....	.....	.....	......
1834	662	.....	595	.....	1,247	406	490	896	.....	.....	.....	......
1835	911	.....	851	.....	1,892	424	651	1,075	.....	.....	.....	......
1836	1,000	.....	951	.....	1,951	512	667	1,779	.....	.....	.....	......
1837	967	.....	737	.....	1,704	448	550	998	183	167	162	517
1838	879	.....	741	.....	1,620	437	521	958	399	304	366	1,069
1839	895	.....	729	.....	1,624	403	527	930	303	369	208	880
1840	798	.....	755	.....	1,553	111	403	814	228	298	237	763
1841	1,153	.....	1,442	.....	3,595	414	476	890	316	422	301	1,039
1842	1,013	.....	1,348	.....	3,361	413	318	731	252	358	205	815
1843	1,119	.....	1,350	.....	3,468	448	516	964	344	343	281	968
1844	1,371	.....	1,679	.....	3,050	447	529	976	262	509	357	1,128
1845	1,534	.....	1,134	.....	3,696	624	571	1,195	258	491	440	1,189
1846	1,515	.....	1,314	1,028	3,699	778	500	1,278	263	430	514	1,207
1847	1,941	.....	1,339	870	4,440	750	510	1,300	425	502	550	1,447
1848	1,884	.....	1,457	1,152	4,569	555	589	1,184	546	493	506	1,545
1849	1,714	.....	1,024	1,228	3,843	559	466	1,025	335	335	319	989
1850	1,714	.....	914	1,105	3,839	560	482	1,042	348	512	435	1,295
1851	1,702	.....	890	1,211	3,828	505	411	916	274	322	311	907
1852	1,814	.....	946	1,235	3,999	418	409	827	488	462	623	1,603
1853	2,224	.....	1,174	1,621	5,019	458	458	916	588	372	802	1,762
1854	2,772	.....	1,700	2,158	6,630	371	334	705	496	482	921	1,899
1855	2,218	.....	1,234	1,815	5,267	367	393	768	697	405	852	1,954

1856	2,548	.....	1,697	1,737	5,082	385	367	752	613	438	872	1,923
1857	2,343	.....	1,624	1,542	5,509	.....	261	261	601	487	818	1,906
1858	2,230	.....	1,737	1,138	5,105	.....	334	334	403	429	700	1,532
1859	3,027	.....	2,346	1,217	6,590	.....	355	355	603	440	1,014	2,057
1860	2,376	.....	2,052	1,021	5,449	.....	277	277	493	418	984	1,895
1861	2,537	.....	2,149	754	5,440	.....	219	219	473	468	1,027	1,968
1862	2,891	.....	1,854	1,039	5,784	.....	388	388	372	385	962	1,719
1863	3,572	....	1,817	1,442	6,831	.....	318	318	392	447	1,049	1,888
1864	2,966	.....	1,530	1,553	6,049	.....	154	154	512	494	1,029	2,035
1865	1,888	.....	1,028	730	3,646	.....	282	282	451	481	807	1,739
1866	2,445	.....	1,975	456	4,876	.....	364	364	541	509	1,238	2,288
1867	1,660	.....	1,184	617	3,461	.....	217	217	547	546	1,344	2,437
1868	.....	1,191	789	461	2,441	.....	224	224	546	598	1,488	2,632
1869	.....	1,591	778	408	2,777	.....	209	209	437	639	1,802	2,158
1870	.....	1,400	445	283	2,128	.....	236	236	551	503	1,306	2,360
1871	.....	1,479	412	276	2,167	.....	210	210	294	141	463	898
1872	.....	1,447	571	338	2,356	.....	117	117	214	169	271	654
1873	.....	1,562	360	258	2,180	.....	201	201	229	269	280	778
1874	.....	1,441	247	197	1,885	.....	130	130	179	214	287	680
1875	.....	896	.....	144	1,040	.....	.....	.....	.....	....	244	244
1876	.....	1,164	...	221	1,285	.....	.....	.....	.....	177	.....	177
1877	.....	.....	.....	116	116	.....	.....	.....	.....	.....	.....	.....
1878	.....	.....	.....	87	87	.....	.....	.....	.....	.....	.....	.....
1879	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1882	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1883	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

STATEMENT *of the number of clearances issued at each office on all the canals, etc.* — (Continued).

YEARS.	GENESEE VALLEY.						Total.
	Scottsville.	Mt. Morris.	Dansville.	Oramel.	Caneadea.	Olean.	
1833	....	....	....	......	......	......	......
1834	....	....	....	......	......	......	......
1835	....	....	....	......	......	......	......
1836	....	....	....	......	......	......	......
1837	....	....	....	......	......	......	......
1838	....	....	....	......	......	......	......
1839	....	....	....	......	......	......	......
1840	478	....	....	......	......	......	574
1841	1,096	....	....	......	......	......	1,096
1842	1,034	....	531	......	......	......	1,565
1843	1,217	....	592	......	......	......	1,807
1844	1,297	....	748	......	......	......	2,045
1845	1,411	....	812	......	......	......	2,223
1846	1,474	....	892	......	......	......	2,366
1847	1,309	....	974	......	......	......	2,283
1848	1,284	....	1,105	......	......	......	2,389
1849	1,084	....	1,078	......	......	......	2,162
1850	1,210	....	1,015	......	......	......	2,225
1851	428	355	1,025	329	......	......	2,037
1852	555	261	728	270	......	......	2,014
1853	714	983	686	514	......	......	2,897

1854	614	1,166	453	935	......	......	2,968
1855	432	1,093	441	468	......	......	2,434
1856	509	1,008	379	439	......	......	2,333
1857	402	1,049	319	482	......	153	2,405
1858	338	951	289	415	......	321	2,314
1859	369	827	276	404	......	342	2,233
1860	349	692	259	......	434	429	2,163
1861	293	576	147	......	367	328	1,711
1862	....	882	181	......	527	556	2,146
1863	....	694	140	......	548	570	1,952
1864	....	485	132	......	363	335	1,315
1865	....	477	112	......	278	134	1,001
1866	....	473	151	......	435	378	1,437
1867	....	392	124	......	403	259	1,178
1868	....	577	132	......	503	407	1,619
1869	....	565	125	......	298	297	1,285
1870	....	435	142	......	392	468	1,437
1871	....	344	137	......	323	500	1,304
1872	....	433	119	......	400	492	1,444
1873	....	567	128	......	415	466	1,576
1874	....	582	....	......	312	371	1,265
1875	....	461	....	......	......	405	866
1876	....	435	....	......	......	286	721
1877	....	365	....	......	......	216	581
1878	....	249	....	......	......	117	366
1879	....	....	....	......	......	......	....
1880	....	....	....	......	......	......	....
1881	....	....	....	......	......	......	....
1882	....	....	....	......	......	......	....

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*—(Continued).

YEARS.	GENESEE VALLEY.						Total.
	Scottsville.	Mt. Morris.	Dansville.	Oramel.	Caneadea.	Olean.	
1883	....	....	....	......	......	......	....
1884	....	....	....	......	......	......	....
1885	....	....	....	......	......	......	....
1886	....	....	....	......	......	......	....
1887	....	....	....	......	......	......	....
1890	....	....	....	......	......	......	....

STATEMENT *of the number of clearances issued at each office on all the canals, etc.*—(Continued).

YEARS.	BLACK RIVER.			ONEIDA LAKE.	SENECA RIVER TOWING PATH.	Total.
	Boonville.	Lyons Falls.	Total.	Higgins.	Baldwinsville.	
1833	....	....	....	....	....	49,636
1834	....	....	....	....	....	64,494
1835	....	....	....	....	....	69,767
1836	....	....	....	....	....	68,830
1837	....	....	....	....	....	62,525
1838	....	....	....	....	....	65,377
1839	....	....	....	....	....	68,882
1840	....	....	....	....	....	69,301
1841	....	....	....	574	....	76,526
1842	....	....	....	1,101	....	67,515
1843	....	....	....	1,250	....	69,720
1844	....	....	....	1,237	....	76,409
1845	....	....	....	1,260	....	81,629
1846	....	....	....	1,089	....	89,933
1847	....	....	....	1,307	....	105,198
1848	....	....	....	1,677	....	98,325
1849	....	....	....	2,304	....	75,648
1850	....	....	....	393	....	29,184
1851	530	....	530	695	....	92,926
1852	609	....	609	1,187	....	93,842
1853	674	....	674	1,073	....	109,148

Statement of the number of clearances issued at each office on all the canals, etc.—(Concluded).

YEARS.	BLACK RIVER.			ONEIDA LAKE.	SENECA RIVER TOWING PATH.	Total.
	Boonville.	Lyons Falls.	Total.	Higgins.	Baldwinsville.	
1854	817	....	817	2,563	491	104,902
1855	933	....	933	2,393	470	97,856
1856	834	....	834	3,177	494	98,214
1857	900	....	900	1,284	....	79,425
1858	868	....	868	1,339	....	80,985
1859	989	....	989	1,072	....	78,354
1860	904	....	904	672	....	89,186
1861	917	....	917	472	....	84,634
1862	1,019	....	1,019	....	....	91,972
1863	1,157	....	1,157	....	....	90,065
1864	924	....	924	....	....	76,981
1865	931	....	931	....	....	70,449
1866	1,153	....	1,153	....	....	81,734
1867	1,065	....	1,065	....	....	78,416
1868	818	313	1,131	....	....	79,897
1869	795	440	1,235	....	....	76,658
1870	776	577	1,353	....	....	78,291
1871	577	604	1,181	....	....	77,878
1872	599	668	1,267	....	....	78,806
1873	427	590	1,017	....	....	77,372
1874	835	....	835	....	....	68,398

1875	754	....	754	....	....	55,328
1876	824	....	824	....	....	50,243
1877	734	....	734	....	....	48,672
1878	776	....	776	....	....	51,029
1879	873	....	873	....	....	48,905
1880	1,039	....	1,039	....	....	58,161
1881	1,098	....	1,098	....	....	43,076
1882	1,224	....	1,224	....	....	46,184
1883	1,406	....	....	....	....	42,739
1884	1,269	....	1,269	....	....	....
1885	....	....	....	....	....	....
1886	1,213	....	1,213	....	....	40,587
1887	1,175	....	1,175	....	....	42,721
1888	1,109	....	....	....	....	36,246
1889	1,350	....	....	....	....	41,656
1890	1,016	....	1,016	....	....	43,439

The following table gives the number of boats registered each year since 1844, the total tonnage each year, and the average tonnage of each boat registered.

YEARS.	Boats.	Tons.	Average of boats.
1844	378	24,360	64 tons.
1845	297	19,781	67 do
1846	477	34,630	73 do
1847	466	110,745	76 do
1848	457	33,815	74 do
1849	215	16,370	76 do
1850	152	12,260	80 do
1851	213	18,450	87 do
1852	271	23,945	88 do
1853	590	57,280	97 do
1854	760	80,365	105 do
1855	471	48,220	102 do
1856	364	38,990	107 do
1857	329	37,510	114 do
1858	255	27,830	109 do
1859	206	20,150	98 do
1860	403	48,355	120 do
1861	619	95,230	154 do
1862	850	142,470	168 do
1863	771	119,170	177 do
1864	399	56,235	141 do
1865	200	28,795	144 do
1866	485	74,630	154 do
1867	520	80,360	155 do
1868	387	64,470	167 do
1869	298	46,650	157 do
1870	269	42,365	157 do
1871	194	29,225	151 do
1872	326	57,925	178 do
1873	433	79,740	184 do
1874	239	45,960	183 do
1875	102	17,435	171 do
1876	75	10,825	144 do
1877	69	9,185	133 do
1878	300	48,365	161 do
1879	382	64,645	169 do
1880	439	93,285	212 do
1881	368	69,065	188 do
1882	93	13,275	143 do
1883	76	11,361	149 do

Number of boats registered since 1844, *tonnage, etc.*—(Concluded).

YEARS.	Boats.	Tons.	Average of boats.
1884	60	9,999	166 tons.
1885	34	5,596	164 do
1886	53	11,005	208 do
1887	157	34,298	218 do
1888	85	18,753	220 do
1889	58	11,918	205 do
1890	77	17,672	229 do

Total tonnage of all the property on the canals, ascending and descending, and the value for the fifty-four years preceding, is as follows:

YEARS.	Tons.	Value.
1837	1,171,296	$55,809,288
1838	1,333,011	65,746,559
1839	1,435,713	73,399,764
1840	1,416,046	66,303,892
1841	1,521,661	92,202,929
1842	1,236,931	60,016,608
1843	1,513,439	76,276,909
1844	1,816,586	90,921,152
1845	1,977,565	100,629,859
1846	2,268,662	115,612,109
1847	2,869,810	151,563,428
1848	2,796,230	140,086,157
1849	2,894,732	144,732,285
1850	3,076,617	156,397,929
1851	2,582,733	159,981,801
1852	3,863,441	196,603,517
1853	4,247,853	207,179,570
1854	4,165,862	210,284,312
1855	4,022,617	204,390,147
1856	4,116,082	218,327,062
1857	3,344,061	136,997,018
1858	3,665,192	138,568,844
1859	3,781,684	132,160,758
1860	4,650,214	170,849,198
1861	4,507,635	130,115,893
1862	5,598,785	203,234,331
1863	5,557,692	240,046,461
1864	4,852,941	274,400,639
1865	4,729,654	256,237,104
1866	5,775,220	270,963,676
1867	5,688,325	278,956,712
1868	6,442,225	305,301,929
1869	5,859,080	249,281,284
1870	6,173,769	231,836,176
1871	6,467,888	238,767,691
1872	6,673,370	220,913,321
1873	6,364,782	191,715,500
1874	5,804,588	196,674,322
1875	4,859,958	145,008,575
1876	4,172,129	113,090,379
1877	4,955,963	128,923,890
1878	5,171,320	182,254,528

Tonnage of property — (Concluded).

YEARS.	Tons.	Value.
1879	5,362,372	$285,280,726
1880	6,457,656	247,844,790
1881	5,179,192	162,153,565
1882	5,467,423	147,918,907
1883	5,664,056	147,861,223
1884	5,009,488	162,097,069
1885	4,731,784	119,536,189
1886	5,293,982	480,061,846
1887	5,553,805	159,245,977
1888	4,942,948	122,524,735
1889	5,370,369	154,584,222
1890	5,246,102	145,761,086

STATEMENT *showing the equalized value of the real and personal property in each county of this State subject to taxation for the year* 1891 ; *the amount each county would be required to pay by tax to raise* $1,000,000 *for canal improvements ; the amount each county paid for support of its schools in* 1890, *and the amount expended by each county in excess of the amount paid for support of schools for year* 1890.

COUNTIES.	Equalized valuation.	Amount each county would be required to pay to raise by tax $1,000,000—rate, .275 mills.	Amount expended in excess of the amount paid for support of schools for the year 1889.	Amount paid for support of schools for the year 1889.	Amount expended for schools for the year 1889.
Albany	$89,813,395	$24,698 68	$5,798 89	$86,854 18	$92,653 07
Allegany	14,467,996	3,978 70	23,368 68	14,082 53	37,451 21
Broome	24,503,926	6,738 58	20,067 67	22,899 51	42,967 18
Cattaraugus	17,057,852	4,690 91	32,759 03	16,265 34	49,024 37
Cayuga	31,719,471	8,722 85	18,746 58	31,286 62	50,033 20
Chautauqua	26,178,450	7,199 07	31,901 84	25,261 33	57,163 17
Chemung	19,877,810	5,466 40	13,422 47	18,983 56	32,406 03
Chenango	18,033,416	4,959 19	20,368 20	17,370 88	37,739 08
Clinton	9,790,897	2,692 50	28,920 22	9,554 31	38,474 53
Columbia	27,552,650	7,576 98	5,825 83	28,243 55	34,069 38
Cortland	11,235,351	3,089 72	12,897 36	10,799 23	23,696 59
Delaware	13,342,871	3,669 29	29,822 06	12,989 16	42,811 22
Dutchess	47,003,394	12,925 93	8,256 45	43,643 61	51,900 06
Erie	165,787,370	45,591 53	8,929 51	139,478 43	148,407 94
Essex	10,167,143	2,795 96	18,591 52	10,017 95	28,609 47
Franklin	8,043,222	2,211 88	21,758 41	7,645 43	29,403 84
Fulton	8,895,134	2,446 16	16,299 78	8,230 85	24,530 63
Genesee	21,423,368	5,891 43	2,663 29	20,890 20	23,553 49
Greene	13,420,545	3,690 65	11,312 39	13,501 29	24,813 68
Hamilton	1,075,269	295 70	3,005 51	1,004 75	4,010 26
Herkimer	23,447,102	6,447 95	12,520 32	22,995 67	35,515 99

Jefferson	24,888,371	6,844 30	34,735 51	23,724 70	58,460 21
Kings	412,371,730	113,402 23	....	378,154 00	347,518 73
Lewis	8,780,108	2,414 53	18,818 37	8,875 36	27,693 73
Livingston	25,520,472	7,018 13	4,949 25	25,098 02	30,047 27
Madison	19,307,984	5,309 70	17,479 93	18,811 42	36,291 35
Monroe	100,012,981	27,503 57	5,541 30	91,987 81	97,529 11
Montgomery	24,787,253	6,816 49	2,170 32	24,132 90	26,303 22
New York	1,676,794,411	461,118 46	....	1,566,787 10	680,135 31
Niagara	27,314,232	7,511 41	13,145 65	26,095 49	39,241 14
Oneida	56,513,205	15,541 13	31,241 69	55,940 07	87,181 76
Onondaga	66,831,426	18,378 64	23,649 22	63,703 82	87,353 04
Ontario	29,525,109	8,119 40	8,838 10	28,812 02	37,650 12
Orange	43,393,995	11,933 35	17,783 41	42,341 20	60,124 61
Orleans	14,834,357	4,079 45	9,484 72	14,529 75	24,014 47
Oswego	23,164,658	6,370 28	36,423 18	22,758 31	59,181 49
Otsego	21,397,702	5,884 34	24,568 80	21,649 35	46,218 15
Putnam	7,318,470	2,012 58	3,691 59	7,054 16	10,745 75
Queens	48,977,385	13,468 78	11,823 28	45,565 94	57,389 22
Rensselaer	61,967,397	17,041 03	13,580 83	60,280 57	73,861 40
Richmond	12,990,422	3,572 37	10,097 37	12,037 75	22,135 12
Rockland	12,705,279	3,493 95	4,361 60	12,682 09	17,043 69
Saratoga	23,326,024	6,414 66	21,484 27	22,708 77	44,193 04
Schenectady	13,138,947	3,613 21	4,207 36	12,504 67	16,712 03
Schoharie	10,266,178	2,823 20	17,615 52	10,012 26	27,627 78
Schuyler	6,885,304	1,893 46	8,506 71	7,025 13	15,531 84
Seneca	15,423,859	4,241 56	5,938 79	14,972 25	20,911 04
St. Lawrence	25,224,452	6,936 72	49,636 99	24,210 02	73,847 01
Steuben	25,514,554	7,016 50	41,879 44	23,688 36	65,567 80
Suffolk	17,897,132	4,921 71	19,319 85	16,781 40	36,101 25
Sullivan	5,499,938	1,512 48	20,715 73	5,326 33	26,042 06
Tioga	11,879,566	3,266 88	16,378 77	11,823 70	28,202 47

STATEMENT *showing the equalized value of the real and personal property in each county of this State, etc.*—(Concluded).

COUNTIES.	Equalized valuation.	Amount each county would be required to pay to raise by tax $1,000,000—rate, .275 mills.	Amount expended in excess of the amount paid for support of schools for the year 1889.	Amount paid for support of schools for the year 1889.	Amount expended for schools for the year 1889.
Tompkins	$13,983,944	$3,845 58	$13,860 22	$14,082 91	$27,943 13
Ulster	25,645,622	7,052 55	31,400 08	24,506 79	55,906 87
Warren	6,910,673	1,900 45	15,326 93	6,273 57	21,600 50
Washington	20,118,730	5,522 65	20,097 60	19,938 24	40,035 84
Wayne	25,257,462	6,945 80	14,431 51	24,383 12	38,814 63
Westchester	87,155,581	23,967 78	....	82,644 40	70,442 75
Wyoming	15,253,358	4,194 67	11,588 87	14,704 72	26,293 59
Yates	12,038,159	3,310 49	4,643 95	11,800 01	16,443 96
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Total	3,683,653,062	$1,013,004 53	....	....	....

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